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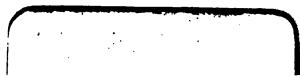
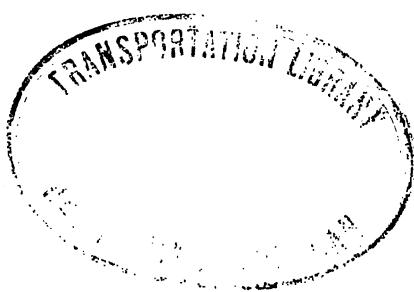
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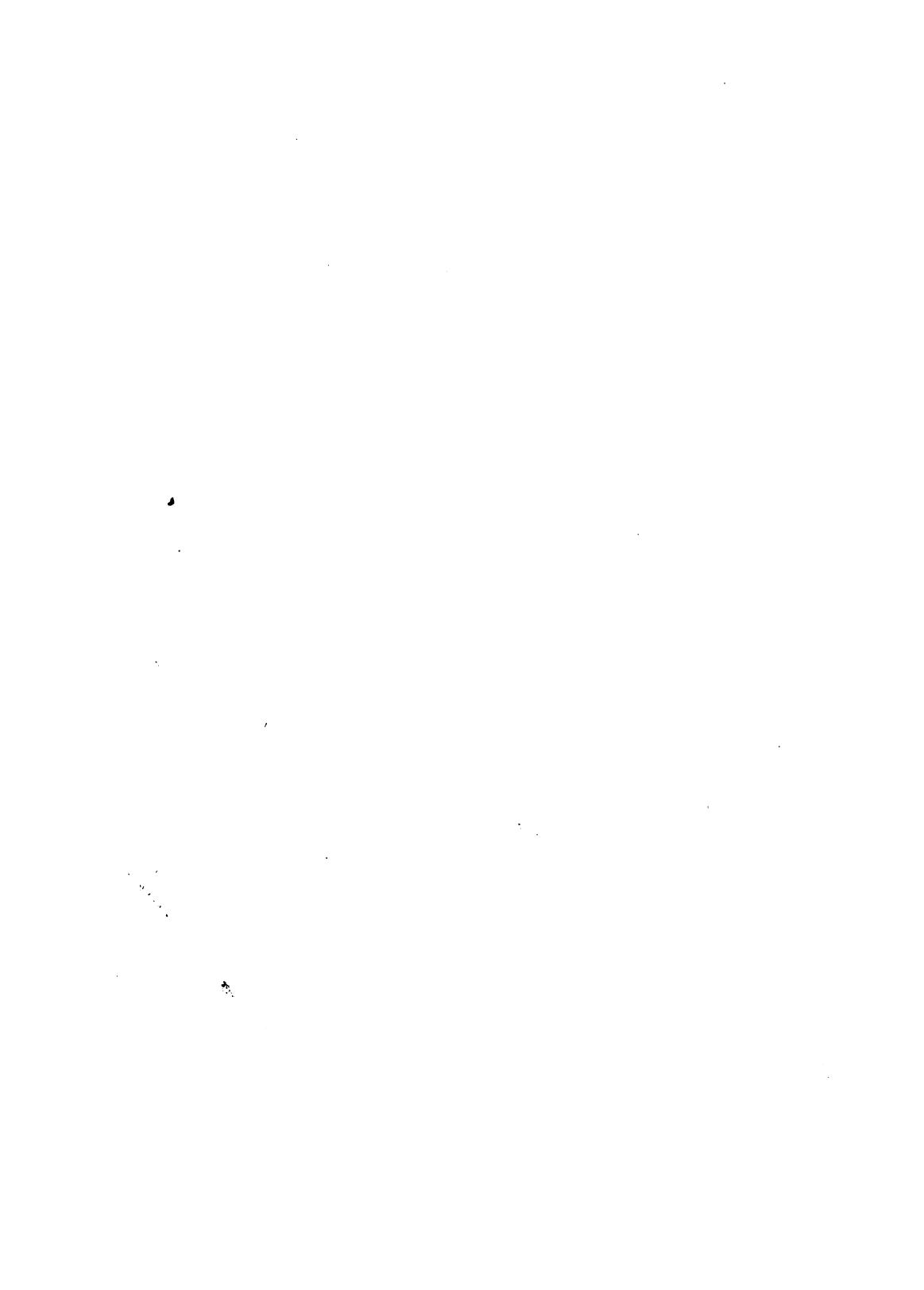


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J. P. Gram
1920, July



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Railroad Valuation by the Interstate Commerce Commission

by

Homer B. Vanderblue, Ph.D.

Associate Professor of Transportation in Northwestern University



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INTRODUCTORY NOTE

VALUATION PROVISIONS OF THE TRANSPORTATION ACT, 1920

THE Transportation Act of 1920 recognizes the dual problems involved in fixing railroad rates.¹ The Interstate Commerce Commission is granted "reasonable latitude to modify or adjust any *particular* rate which it finds unjust or unreasonable." But the significant contribution of the new act is the standard directed for measuring *total* income:

In the exercise of its power to prescribe just and reasonable rates, the Commission shall initiate, modify, establish or adjust such rates so that carriers as a whole (or as a whole in each of such rate groups or territories as the Commission may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a *fair return upon the aggregate value of the railway property* of such carriers held for and used in the service of transportation.

From a rule of negation designed to protect the railroads from "confiscation" an affirmative program has been evolved. This directs a conscious effort to regulate total railroad earnings. Heretofore it has been the "reasonableness" of individual rates that has received the burden of emphasis in the opinions of the Interstate

¹ This discussion of the Cummins-Esch Bill is based upon House Report 650, 66th Congress, 2d Session. The Valuation section of the new act will appear as Sec. 15a of the Interstate Commerce Act; it is Sec. 422 of the Conference Bill as passed.

Commerce Commission.¹ But the doctrine written into the Interstate Commerce Act by the provisions of the Amendment of 1920 goes beyond the common law doctrine of rate reasonableness recognized in the original Act of 1887. It goes beyond the very doctrine of constitutional law upon which it is based. When Justice Harlan in 1898 declared that "the company is entitled to ask . . . a fair return upon the value of that which it employs for the public convenience,"² he sought only to *guarantee a minimum*. The Act of 1920, using the "fair return upon value" formula directs the establishment of schedules with the frank aim of limiting maximum revenue. In short, it seeks to secure for the public a part of any future "unearned increments" which may accrue in railroad earnings.

For the two years following March 1, 1920, the Act directs that the Commission shall take, as the total fair return to *all* carriers, a sum equal to $5\frac{1}{2}$ per cent of the aggregate value of the transportation properties of all carriers. The Commission may, however, "in its discretion," add to this amount an additional one-half per cent to provide improvements, betterments or equipment (presumably so-called "unproductive improvements"), properly chargeable to capital account. This mandate of Congress governs only for two years following the return of the roads to their private owners. Thereafter the "legislative discretion" is delegated to

¹ See the discussion in the writer's *Railroad Valuation*, pp. 1-7, in the cases there cited, and in the Fifteen Per Cent case, 45 I. C. C. 303.

² *Smyth v. Ames*, 160 U. S. 466, 546. The Mississippi statute of 1884 which came before the Court in *Stone v. Farmers' Loan & Trust Co.*, 116 U. S. 307, 309, directed the State Railroad Commission to revise the carriers' tariffs, permitting "a fair and just return on the value of such railroads, its appurtenances, and equipment." The California statute directing local bodies regulating water rates to "estimate, as nearly as may be, the value," etc., was identified by Justice Holmes with the value rule of the Supreme Court. *San Diego Land & Town Co. v. Jasper*, 189 U. S. 439, 442.

the Commission: the Commission will determine and publish the percentage which shall constitute the "fair rate of return."¹

By the device of throwing all the carriers into one big basket, the problem of determining upon a fair rate of return for each carrier is avoided. The theory of the act would seem to be, however, that there is one single fair rate of return which should be applied to all carriers alike, any amount above this rate being in excess of a fair return.² The Act provides that a percentage once fixed shall be uniform for all rate groups or territories designated by the Commission. The same standard is invoked in the rules established to govern the action of the Commission in its study of the problem of consolidating the railways into a limited number of systems:

The several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the values of the properties through which the service is rendered shall be the same so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic, and, under efficient management, earn substantially the same rate of return upon the value of their respective railway properties.³

¹ For the distinction between the legislative and judicial view points see Minnesota Rate cases, 230 U. S. 352, 432; and the fuller discussion in *Knoxville v. Knoxville Water Co.*, 212 U. S. 1, 16; *Wilcox v. Consolidated Gas Co.*, 212 U. S. 19, 41; *Louisville v. Cumberland T. & T. Co.*, 225 U. S. 430, 436; *L. & N. R. R. Co. v. Garrett*, 231 U. S. 299, 313. It is in the latter case that the phrase "legislative discretion" is used.

² This attitude is reflected in the following language of the new Act (par. 5 of Sec. 422):

"Inasmuch as it is impossible (without regulation and control in the interest of the commerce of the United States considered as a whole) to establish uniform rates upon competitive traffic which will adequately sustain all the carriers which are engaged in such traffic and which are indispensable to the communities to which they render the service of transportation, without enabling some of such carriers to receive a net railway operating income *substantially and unreasonably in excess of a fair return upon the value* of their railway property held for and used in the service of transportation, It is HEREBY DECLARED that any carrier which receives such an income so in excess of a fair return, shall hold such part of the excess, as hereinafter prescribed, as trustee for, and shall pay it to the United States."

³ Transportation Act of 1920, Sec. 407, amending Sec. 5 of the Interstate Commerce Act.

But until such consolidations can be effected, it is expected that different rates of return will accrue to individual carriers. Given equal competitive rates (and the new Act recognizes that uniform rates on competitive traffic are inevitable) gross earnings will continue to reflect relative traffic density. Operating conditions will govern operating expense. The differential advantages possessed by the Union Pacific over its competitor the Rio Grande — to use an obvious example — will continue, until absorbed through consolidation.

One-half of the excess over 6 per cent of the value of any individual line or system, the Act leaves with the carrier. This 6 per cent figure, in the present state of the Act, is a standard, regardless of any action of the Commission in subsequently establishing a fair rate of return above or below this figure. The other half of the excess must be retained by the carrier as a reserve, until the accumulation equals 5 per cent of the value of the property.¹ Thereafter the carrier may use its half for "any lawful purpose." Presumably, tho on this subject the Act is silent, if reinvested in plant, as, for example, if spent for double tracking, enlarging tunnels, or eliminating curvature, the amounts so "put back into the property" will receive recognition in the value figure.

The other half of any excess above 6 per cent the carrier will pay into a "revolving fund," the property of the United States administered by the Commission. This "general railroad contingent fund" will be loaned to carriers for new capital expenditures or for refunding maturing obligations, or will be expended for equipment and facilities to be leased subsequently to the railroads.

¹ Only for the purpose of paying interest, dividends, or rentals may a carrier draw on this reserve, and then only to the extent that its net railway operating income for any year is less than a sum equal to 6 per cent of the property value.

The Transportation Act does not define value, nor does it dictate how value shall be determined. "Aggregate value" and not "fair value" is the phrase used. Admonitions of a general character the Act does contain. The Commission is directed to give "due consideration to all the elements of value recognized by the law of the land for rate making purposes," and it is adjudged to give to the property investment account "only that consideration which under such law it is entitled to in establishing values for rate making purposes." And there is specific language that, when value has been "finally" ascertained under the provisions of the Valuation Act of 1913, "the value so ascertained shall be deemed by the Commission to be the value . . . for the purpose of determining . . . aggregate value." This figure of aggregate value, the Commission will determine "from time to time and as often as may be necessary." In the calculation of the rate levels for 1920-22, the Act contemplates that the Commission will utilize its investigations under the Valuation Act "in so far as deemed by it available."

Thus two distinct tasks bearing upon the valuation problem are placed with the Commission by the Transportation Act of 1920. One, that of fixing the rate of return need cause no present concern: 5½-6 per cent is provided for two years. But the other, that of finding "value," demands immediate attention. A figure of value, however determined, is prerequisite to the application of the "fair return on value" doctrine. Whatever uncertainty there may have been concerning the intention of Congress in passing the Valuation Act, there need be no present doubt: the Commission must proceed to the task of fixing "final value."¹ The subse-

¹ See the discussion below, p. 8, note 2.

On January 7-9, 1920, the Commission heard arguments on Value, in which Director Prouty, Mr. Farrell, the Commission, counsel for the State Commissions, the Carriers,

quent discussion is an analysis of the investigation made under the provisions of the Valuation Amendment which appears as Section 19a of the Interstate Commerce Act.¹

and the Railroad Brotherhoods discussed the theory of " railroad valuation." The Carrier Brief then filed does not contain the " minimum value " doctrine which is criticized below, p. 99. In other essentials the carrier attitude is substantially that here presented. For the arguments in detail, see Hearings, January, 1920, published by the Secretary, Presidents' Conference Committee. The various printed transcripts so published are here cited as " Hearings."

¹ See Appendix.

RAILROAD VALUATION BY THE INTERSTATE COMMERCE COMMISSION

SUMMARY

Introduction: Progress of the Interstate Commerce Commission Valuations, 7.—I. The Commission's Reproduction Hypothesis, 10.—The reproduction program, 11.—Topographical conditions, 16.—Contingencies, 19.—II. Cost of Reproduction, 22.—Organization of the work, 24.—Basis of the inventory, 25.—Estimates and errors, 26.—Unit prices, 29.—Commission procedure, 32.—Expert testimony, 32.—“Overhead charges,” 33.—Interest during construction, 37.—III. Depreciation, 39.—Second hand materials, 40.—Obsolescence or “functional depreciation,” 40.—Observation and estimate, 42.—Deferred maintenance as depreciation, 45.—Capacity for service, 47.—Maintenance as investment, 49.—IV. Land, 52.—Present value of land, 53.—Commission procedure, 54.—Texas Midland controversy, 55.—Land valuation and condemnation practice, 60.—Hypothetical cost of reacquiring land, 63.—Minnesota Rate cases on land valuation, 64.—“Railway value,” 66.—Value and cost, 68.—The unearned increment, earnings and value, 70.—V. Cost. Facts and estimates, 72.—Commission procedure, 73.—Renewals and costs, 74.—Appreciation, 78.—Original cost determined by appraisal, 81.—Facts and estimates once more, 82.—VI. Intangibles. Commission doctrine, 83.—Franchise value, 84.—Going value and strategic value, 85.—Wisconsin deficit theory, 88.—VII. Final value, 89.—Confiscation and condemnation, 89.—Exchange value, 90.—Capitalization of earnings, 92.—The general rate structure, 95.—The reasonable return as a variable, 96.—The appeal to authority, 100.—Cost of reproduction as a basic fact, 101.—Land once more, 102.—Cost of reproduction and investment, 105.—The rule in *Smyth v. Ames*, 109.—The Commission and “final value,” 110.

THE skeptic who characterized the Railroad Valuation Amendment to the Interstate Commerce Act as legislation which directed an attempt to achieve the impossible, has, *prima facie*, been discomfited. Tenta-

tive valuations have been served on fifty-five carriers; extensive hearings have been held; and, for the Texas Midland, the Winston-Salem Southbound, and the Kansas City Southern roads, formal findings and orders as to "basic facts" have been published.¹ The field work in the engineering section has been "substantially" completed, and that in the land and accounting sections will be well advanced toward completion by the end of 1920. Within the next two years it is "hoped" that complete data will be available upon "most railway systems of significance."²

But in none of the tentative valuations has a single sum been set as the "value" of the carrier's property. Indeed, the tentative valuations do not, strictly speaking, contain figures of "value" at all. There is a summary of "cost of reproduction new" and of "cost of reproduction less depreciation" of the railroad plant (excluding land); of the "present value" of land; and of original cost, where data were found. But there is no figure purporting to represent the "value" of the railroad. Such a figure the Commission now promises ultimately to fix, tho recognizing that the Act might be interpreted to eliminate that responsibility.³

¹ Texas Midland Railroad, 1 Valuation Reports of the Interstate Commerce Commission (Val. Rep.), 1; Winston-Salem Southbound Railway, 1 Val. Rep. 187; Kansas City Southern Railway, 1 Val. Rep. 223. In the Kansas City Southern case, Commissioners Aitchison and Eastman did not participate, and Commissioners Daniels and Hall dissented, indicating substantial differences of opinion. Pp. 266-274. The Texas Midland opinion describes the methods and theories of the Commission *in extenso*, and parallel issues appearing in the Winston-Salem Southbound and Kansas City Southern cases are decided by reference to the stand taken in the preliminary and test case.

² Memorandum on Final Value, filed by Director Prouty of the Bureau of Valuation after the Hearing of January, 1920, upon that subject, p. 2. See also Thirty-third Annual Report of the Interstate Commerce Commission (1919), p. 51.

³ Texas Midland, 1 Val. Rep. 1, 6; Winston-Salem Southbound, 1 Val. Rep. 187, 189; Kansas City Southern, 1 Val. Rep. 223, 229.

The decision ultimately to make a finding of "value" upheld the contention of the attorneys for the carriers, see Texas Midland Brief of Pierce Butler and Leslie Craven, August 1, 1917 (hereafter cited as Texas Midland Brief), p. 31 and following; but com-

The Texas Midland opinion contains the assurance, however, that all of the "basic facts" upon which a judgment is to be formed are before the Commission, and that the issues as to these are "wholly independent" of what should be deduced from them. There now remains "but the one step of deducing from the facts stated the sum to be found." And, in the meantime, the "basic facts" shown in the tentative valuations (with minor corrections) are made "final."¹ In the Winston-Salem Southbound case, the Commission cites its previous opinion and makes findings of "underlying facts," upon which it promises ultimately to state "a

pare Atlanta, Birmingham and Atlantic Brief of W. G. Brantley, December 1, 1917, (the A., B. & A. Brief), p. 11 and following, for a compromise point of view; the Kansas City Southern Brief of Samuel Untermyer, S. W. Moore, and J. M. Souby (the Kansas City Southern Brief), p. 3 and their Reply Brief, p. 5; and overruled the contention of Mr. Farrell, the Bureau of Valuation's solicitor (Brief in the Texas Midland Case, p. 1 and following), and of Commissioner Aitchison, formerly solicitor for the Nat'l Ass'n Ry. Com'rs, Brief, pp. 10-15 and following.

The issue was simply one of interpretation of the act, and the basis of the difference of interpretation can be explained only in terms of the act. The railroads based their claim for the finding of such a sum on the words contained in the title of the act, "providing for a valuation of the several classes of property," and upon the presence of the word "whole" in the seventh paragraph as indicated below. The argument of Mr. Farrell (and in substance his argument follows that previously advanced by the California Railroad Commission, Brief on Fundamental Principles, pp. 11-13, and Mr. Max Thelen, of that body, Hearings, January, 1916, pp. 7-23) looked also to the language of the act. The first paragraph provides "that the Commission shall, as hereinafter provided, investigate, ascertain and report the value of all the property owned or used by every common carrier. . . ." The significant words are here held to be the qualifying phrase, "as hereinafter provided," since the following paragraph requires the Commission to ascertain and report the three "cost values": cost of reproduction new, cost of production less depreciation, and original cost to date. A separate paragraph, devoted to land, directed a report of "the original cost of all lands . . . and the present value . . . and separately the original and present cost of condemnation . . . in excess of such original cost or present value." The seventh paragraph then reads, "such investigation shall show the value of the property of every common carrier as a whole and separately the value of its property in each of the several states, . . . classified and in detail as herein required." The carriers contended that the final clause, "classified and in detail as herein required," etc., did not modify the phrase, "as a whole"; Mr. Farrell and Mr. Aitchison insisted that the phrase did so serve as a modifier, and that, taken in connection with the same words in the first paragraph, and the classification of "cost values," etc., the requirement of the act was met, when such figures were reported.

¹ 1 Val. Rep. 1, 6. But in his dissent to the Kansas City Southern opinion, Commissioner Hall says: "With much in this report I am in accord, but, even with the reservations which it contains as to further finding of 'single value,' I am not persuaded that it reports all the facts of substance which we are required by the valuation act to report or amounts to a substantial compliance therewith." 1 Val. Rep. 223, 286.

single sum as the value of the common carrier property . . . for purposes under the act to regulate commerce.”¹ And what are these “ basic underlying facts ? ” As made final by the Commission, they include, in addition to the “ cost values ” (cost of reproduction new, and less depreciation, and original cost to date) and the “ present value ” of land, a statement of the corporate and financial history, a rewritten income account, and a description, in general terms, of traffic possibilities and operating conditions.² Surely this is a sufficient array of “ facts ” to satisfy the requirement of the rule in *Smyth v. Ames*—even to the “ saving ” clause: “ we do not say that there may not be other matters to be regarded in estimating the value of the property.”³

I. THE COMMISSION’S REPRODUCTION HYPOTHESIS

The tentative valuations contain figures of cost of reproduction.⁴ The totals of the first half dozen follow:

Railroad	Reproduction new except land	Less depreciation except land
Texas Midland.....	3,360,053	2,509,209
Winston-Salem S. B.	5,121,188	4,753,006
A., B. & A.	24,154,998	19,408,810
K. C. Southern.....	46,274,363	38,258,909
N. O., T. & M.	8,865,636	7,572,886
E., J. & E.	13,742,023	11,057,598

¹ 1 Val. Rep. 187, 188. See also Kansas City Southern, 1 Val. Rep. 223, 229.

² See the Commission’s formal orders, Texas Midland, 1 Val. Rep. 1, 73, 80; Winston-Salem Southbound, 1 Val. Rep. 187, 202; Kansas City Southern, 1 Val. Rep. 223, 275. The Engineering, Land and Accounting Reports are by reference made part of these orders. Texas Midland, p. 79; Winston-Salem Southbound, p. 206; Kansas City Southern, p. 321. The *Railway Age Gazette* was gratified “ that the bill passed by Congress seems to provide fully for a valuation that shall include all important factors.” Vol. 54, p. 421.

³ 169 U. S. 466, 546. See the writer’s Railroad Valuation (hereafter cited as Railroad Valuation), pp. 15-23. The present study brings to date (March 15, 1920) the discussion of that volume. Where, therefore, the present argument can be abridged, reference to the discussion contained therein is given in the footnotes, the aim being to avoid duplication.

⁴ The following is an interesting paragraph from Mr. Brantley:

“ The consuming love of accuracy which seemingly now controls the view of those opposing the cost of reproduction method for determining the value of carrier lands . . .

An understanding of the governing hypothesis and of the methods of arriving at these figures is essential before a judgment as to their possible usefulness in the determination of "value" can be expressed.

Assuming the "mental obliteration" of the existing railroad (abandoned sections are not inventoried),¹ what will be the cost of its "hypothetical reproduction"? — "under present conditions, by present methods, and at present prices?"² The non-existence of the railroad is assumed, while all other conditions are taken as existent on valuation date.³ Only the railroad disappears. There shall then be a "rational conception of the process of reproduction."⁴

is more than strange . . . because it overlooks the fact that there is scarcely a figure or statement in the tentative valuation of protestant's properties which is not a mere estimate, or in other words, the opinion of somebody." A., B. & A. Brief, p. 622.

It may be said, however, that the Commission has recognised that cost of reproduction is "at best an estimate." Texas Midland, 1 Val. Rep. 1, 16.

¹ Texas Midland, 1 Val. Rep. 1, 54, 115; Kansas City Southern, *ibid.*, pp. 223, 243.

² Prouty, Memorandum, Texas Midland Railroad, p. 9.

³ *Ibid.*, p. 6.

⁴ "This method of estimating cost of reproduction new is attacked by the Minnesota Railroad and Warehouse Commission as being within the prohibition announced . . . in the Minnesota Rate Cases. It is contended that this decision condemned any cost of reproduction new ascertained by an assumption of the nonexistence of the railroad under valuation while at the same time assuming the existence of cities, industries, and other developments alongside the railroad. . . .

The Minnesota commission further contends that we have construed the words "cost of reproduction new" too literally; that "cost of reproduction new" is in reality a misnomer, and that what should be reported is inventory value at valuation date. In other words, we should ascertain the cost of the railroad property as it stands on valuation date without taking into consideration any expense which would be incurred by reason of the fact that it would have to be built. By applying this method to the instant case, it is asserted that the figure reported by us is too high by at least \$630,151, or approximately 23 per cent. . . . We cannot accept the view." Texas Midland, 1 Val. Rep. 1, 11, 12.

See the arguments of Messrs. Flannery and Elmquist; the former, Hearings, December, 1917, pp. 76, 77, the latter, Hearings, January, 1917, p. 51. Asked by Commissioner Hall if there was not an element of fiction in assuming construction to take place over night, Mr. Elmquist said: "There is not going to be any reconstruction." *Ibid.*, p. 305.

⁵ Texas Midland, 1 Val. Rep. 1, 54. Mr. Aitchison, Brief for the Nat'l Ass'n Ry. Com'rs, had called this "rational" process, "the exercise of imagination in the realms of the transcendental." P. 82.

Such reproduction necessarily involves the securing of a charter¹ and the raising of the needed funds. For simplicity it is assumed that the credit of all railroads will be equally good.² Engineering parties must be organized and placed in the field; but their task is a much simpler one than that faced by the original surveyors. For, through the country side, and in the heart of the great city, there is a long stretch of vacant land, corresponding to the exact site now occupied by the railroad.³ Alongside, great industrial plants (dependent for their very life upon the presence of the railroad) continue to operate, receiving and delivering freight. But these plants do not encroach upon the right of way. If so, it would be less easy for the engineer who — instead of running preliminary surveys, indulging in "supposititious groping around the country"⁴ — is to walk to the exact spot where the road now exists, and to stumble at once on the best route. It would seem hardly necessary for him to do more than verify the center line.⁵ His task is next to prepare what he conceives to

¹ Texas Midland, 1 Val. Rep. 1, 30.

² Ibid., p. 31. See Prouty, Memorandum, Texas Midland Railroad, p. 42, and especially Notes and Comments thereon by Messrs. Butler and Craven, p. 158, where it is indicated that such assumption is a departure from a strict "reproduction" hypothesis. The credit of all railroads is not by any means the same; nor would it be in the event of reproduction, unless the assumption be made that all other things are equal.

These are hereafter cited as Prouty, Memorandum, and Notes and Comments.

³ This holds true even tho. when the original line was constructed, buildings were wrecked. See Hearings, January, 1917, pp. 40-46; also A., B. & A. Brief, pp. 97, 98.

⁴ Mr. Aitchison, Brief for Nat'l Ass'n Ry. Com'rs, p. 101.

⁵ "The tentative valuation includes a sum of \$9,200 for 'location engineering for a period of four months, at an average expense per month of \$2,300.' The propriety of this inclusion is questioned by the valuation committee of the National Association of Railway and Utilities Commissioners, for the reason that it represents reconnaissance, an obvious conjectural expense incurred in supposititious groping through the country for locations which are not used. Such an expense, it is argued, should not be included in the reproduction cost of a railroad, the exact location of which is known. In the construction of a new railroad it is necessary to reconnoiter, lay out lines, and engage in considerable preliminary work in order to secure the most advantageous route. Such a program is not necessary in a theoretical reproduction of a property under valuation. The inclusion of an amount to cover expenses of this character is incorrect. Cost of reproduction new is the cost of reproducing the existing line of railroad." Texas Midland, 1 Val. Rep. 1, 28.

be "the most practicable and economical program for the construction of the road."¹

In fixing upon this program, the engineer is not governed by the history of the road:² — he is to assume that he is entering upon an entirely new venture, but one where the uncertainties faced in original construction need not be faced.³ Tho actual construction began at the east end, he may begin at the west;⁴ tho the original construction required four years, he may finish in three.⁵ His problem is further simplified by the fact that he has at his command all existing means of transportation (except the road under reproduction), whether or not the competing and connecting lines were in existence when the road was built. The accident of ownership is therefore important. Had the Texas Midland been absorbed, say by the St. Louis Southwestern,⁶ the latter road would not, as now, be available to haul men and materials. Conceivably a different construction program, and a different cost of reproduction would

¹ Texas Midland, 1 Val. Rep. 1, 11. In its Kansas City Southern opinion the Commission said on this point: "An economical production of the property of the carrier would render unnecessary the excavation of this material in the same manner as it was excavated in original construction and for this reason it has no place in cost of reproduction new." 1 Val. Rep. 223, 244.

² An illustration appears in the Texas Midland opinion:

"It often happens that the track was at first supported upon a timber trestle which later was filled. The existing structure is an embankment, which contains upon the inside the original trestle. In the inventorying of the property this is measured, computed, and priced as though it was simply an embankment, no reference whatever being made to the trestle. In applying the price the engineer inquires whether approved construction would require the erection of a temporary trestle from which the embankment would be built, or whether the embankment should be constructed without the expense of such trestle, or so much of it as has not decayed. If good construction would require a temporary trestle, then proper allowance is made for the same; otherwise the price is determined as though no trestle had ever existed." P. 117.

³ Texas Midland, 1 Val. Rep. 1, 25, 143.

⁴ Comments on the Reproduction Cost New of the A., B. & A., E. M. Durham, Special Engineer, p. 20.

⁵ Protest, N. O., T. & M., pp. 18-21; W.-S. S., pp. 11, 12; A., B. & A. pp. 13, 25, etc.

⁶ Or had the Winston-Salem Southbound been built as a system line by either the Norfolk & Western, or the Atlantic Coast Line (the joint owners).

result.¹ Likewise if the Pacific coast extension of the St. Paul had not been built, a different construction program for the Northern Pacific would be necessary, from the program now available. That line, extended as a pioneer, carried materials over its completed portion to the end of track. Now that the St. Paul is built, it can receive men and materials at many points along the line. And prosecution of the work simultaneously in many sections very much reduces the total construction period.²

¹ See the discussion of the imaginary "material yards." Hearings, December, 1917, pp. 79-85; Texas Midland Reply Brief, p. 321. The Commission's engineering program for the A., B., & A. is shown in Hearings, December, 1917, pp. 83, 84; for the Texas Midland, March, 1917, pp. 904-922.

² 1 Val. Rep. 32, 139, 157. See Prouty, Memorandum, p. 44. The railroad representatives have not objected to the application of the hypothesis in these terms. Hearings, May, 1915, pp. 32, 39; Carrier Valuation Brief of 1915, pp. 35-47, 61, 62.

Mr. Worley described the process of fixing upon a construction period for the Kansas City Southern in the following language:

"The construction period on the Kansas City Southern was determined after careful study of all the facilities, the conditions of all the lines, other railways, the time that it had taken to construct the individual sections, and many other matters. We reached the determination by exactly the same processes that we used in reaching all these conclusions. I believe that this is as far as I can answer. We fixed three years approximately. . . . We made a careful study of all the railroads along the Kansas City Southern, the facilities for getting in equipment and material, and all other related matters, made a study of the actual time consumed in constructing the various sections, and it seemed to us that the various sections could be constructed in a less period; that a three-year period was a fair period, and that is about the general study that was given that matter. . . . We divided the road up into districts, you might say, in that we took each intersecting point where a foreign railroad touched the Kansas City Southern, and we ascertained the distance between that and the next railroad point, and we ascertained the average distance that it would have to go from each point for the center of grading activity. We assumed that construction work could be carried on from each of those points. We made our assumption on the basis that the facilities were there and work could be carried on from each of those points. We did not assume that a certain number of teams or a certain number of men were to be unloaded at that particular point on a particular day. We considered the facilities for doing the work, but not the chronological order in which each mile would be done. We did not make a computation as to where each piece of work would begin. We did not make an analysis of where the work would begin at this town, or this block, or this road. We considered that the facilities were there and left the matter whether a particular contractor would begin at any particular station or not to his own discretion, if he wanted to consider it from that viewpoint.

"I made a study of the time actually consumed in the original construction of the various sections of the road, and also for the construction of the whole road.

"We had this information and it was studied from many angles. We ascertained the construction period of many other pieces of property and, as I recall, I think at one time early in the work we built up an entirely synthetical program, endeavoring to, and I do

The materials for reproduction come from the most available *present* source,¹ altho Mr. Prouty indicated that if there was not enough sand in the pits of the Texas Midland properly to ballast the road, it would be assumed, "for reproduction purposes," to have been put back.² Ordinarily the reproduction is in kind, altho, for the A., B. & A., open hearth steel has been "substituted" for the Bessemer rail laid before the carrier had a Birmingham terminal,³ and for the Texas Midland, treated pine timbers have been "substituted" for the unavailable bois d'arc.⁴ But relay rails are reproduced not "new," but as "relay";⁵ locomotives bought second hand are reproduced as "new" second

not know how much weight that really had, but we tried to approach it from almost every angle, and our final conclusion was, as has been stated in the record, and we had this information as to the actual construction periods of these sections of the road of the Kansas City Southern as it was originally constructed and I think we gave some weight to that." Quoted, Reply Brief of Messrs. Farrell and Benton, p. 60.

For Mr. Jones' basis fixing upon the construction period of the A., B. & A., see A., B. & A. Brief, p. 286 and following.

¹ "It may have been thought necessary in the original construction of the road to bring material for a considerable distance in order to secure a proper foundation for the track. Since the construction of the property sources of supply have been developed from which material of substantially the same kind, although not identical, might be obtained at a much less expense. In such case the engineering inventory would enumerate material of the general kind which is found in the track, but the price would contemplate the obtaining of that material from the less expensive source of supply and not from the original source." Texas Midland, 1 Val. Rep. 1, 117.

² A., B. & A. Brief, p. 626. Mr. Maltbie, speaking for the Nat'l Ass'n of Ry. Com's, Hearings, May, 1915, p. 98, proposed the use of the original sources of supply for gravel, ties and rails. Mr. Farrell even suggested the use of the material now in the railroad. "What," he asked, "is going to become of the material that is there now?" (A., B. & A. Brief, p. 48) — what, indeed?

³ Durham, Comments on the . . . A., B. & A. "The Bessemer rail in use on the A., B. & A. was found to be more expensive, freight rates considered, than the open-hearth now to be had at Ensley," p. 24.

⁴ 1 Val. Rep. 1, 41. It was contended by Mr. Helm of Kansas that "since bois d'arc is indestructible and these piles are now in existence in bridges, they would be available for reproduction if the road were blotted out." Texas Midland Brief, p. 576.

⁵ 1 Val. Rep. 1, 43. At p. 35 the Commission had said:

"The property to be reproduced is the existing property as it was when it was put into its present service. When the records of the carrier clearly show that second hand materials were used the cost of reproduction new will be estimated for the same kind of materials in the same condition as when installed."

See Kansas City Southern Brief, pp. 127-134, for extended exposition of carrier contention, which was overruled, Kansas City Southern, 1 Val. Rep. 223, 238.

hand locomotives.¹ And a locomotive crane, bought second hand by the Texas Midland, is "reproduced" for actual cost plus the freight from Cleveland, Ohio, where the crane was manufactured, altho it had been purchased at a nearer point and the actual freight had been "less than that allowed."²

So also the *present*, and not the original, topographical conditions govern the reproduction. "If original conditions were to govern, data concerning the work done many years ago could not be obtained in many instances. . . . The amount reported . . . would be the result of speculation."³ Therefore, the water-course which presented a problem at the time of original construction, but which (perhaps because of the change in drainage resulting from the building of the railroad) has since disappeared, presents no present difficulties. If a swamp has been drained, the present construction is through non-swampy land. And if the carrier itself, in order to avoid a double crossing of a stream at a bend, has dug a cutoff, that work is not a part of reproduction new.⁴ Nor is riprap protection against streams,⁵ or a public improvement located off the right of way, since neither "would not be interfered with by a removal of the railroad."⁶ If the public improvement were wiped

¹ Texas Midland, 1 Val. Rep. 1, 86; see Protest, A., B. & A., p. 136.

² Prouty, Memorandum, p. 82; see Texas Midland Brief, p. 646; and Texas Midland, 1 Val. Rep. 1, 46. The discussion represents an extreme example of the mixture of "cost" and "reproduction" concepts. Mr. Prouty insisted that "to apply other than a second hand price would unduly inflate the cost of reproduction new." Typewritten Record, p. 508. The crane had, as a matter of fact, been in use for less than a week at the time of the purchase by the railroad. *Ibid.*, pp. 788, 801.

³ Texas Midland, 1 Val. Rep. 1, 16.

⁴ *Ibid.*, pp. 115, 118.

⁵ Kansas City Southern Brief, pp. 175-178. See Hearings, May, 1915, pp. 38, 39. But in the Kansas City Southern case, 1 Val. Rep. 223, 245, the Commission allowed riprap when "a necessary part of the property."

⁶ Farrell, Texas Midland Brief, p. 29; see Hearings, March, 1917, p. 57 and following. The tone of the discussion is indicated by the following excerpt:

out by the removal of the track, its cost of reproduction would be included.¹

One relatively unimportant item, clearing and grubbing, has given rise to considerable discussion, discussion quite out of proportion, indeed, to the financial interests at stake.² The eastern section of the Atlanta, Birmingham and Atlantic was originally built through a pine forest, where the presence of the railroad made possible the lumbering operations which resulted in clearing the land now used for agriculture.³ Shall the right of way be considered as covered with the original forest, or shall it be taken as tillage land, similar to that adjacent? Applying the doctrine of "theoretical reproduction," the Commission has held that — in a case such as that cited for the A., B. & A.—"the amount of clearing and grubbing which would be performed to-day . . . would be considerably less than that which was done in connection with original construction."⁴ The rule of the Commission, approved as "involving the minimum of conjecture," is therefore to consider the right of way as in the same condition as adjacent land. If there are no trees on either side of the right of way, the latter is treated as similarly devoid of trees; if a forest adjoins, even tho, at the time of construction, the land was clear, a corresponding growth is assumed to be on

Mr. Farrell: "Now if the railroad were wiped out of existence would those public improvements be wiped out of existence also?"

Mr. Durham: "Why I cannot answer that question."

Mr. Farrell: "Well just what seems to trouble you about answering that question?"

Mr. Durham: "As to what would happen if the railroad were wiped out of existence. I don't know."

¹ Texas Midland, 1 Val. Rep. 1, 19; but see Kansas City Southern, 1 Val. Rep. 223, 239, 240.

² Texas Midland, 1 Val. Rep. 1, 14-16; Hearings, May, 1915, pp. 36, 37; January, 1917, pp. 31-44; Texas Midland Brief, pp. 556-559; Prouty, Memorandum, pp. 68, 69; and Notes and Comments, pp. 13-23.

³ A., B. & A. Brief, pp. 96-100.

⁴ Texas Midland, 1 Val. Rep. 1, 14.

the right of way.¹ The rule is made to work both ways — with the balance against the railroad.

A seemingly obvious inconsistency emphasizes the artificiality of the reproduction hypothesis, which, it will be remembered, assumes that only the "obliterated" railroad is rendered non-existent. Both the Atlanta, Birmingham and Atlantic and the Winston-Salem Southbound are recent constructions. When crossing the tracks of an older road, the junior line usually bears the expense of providing the necessary bridge or interlocking plant. But on the theory that the Atlanta and West Point owns the bridge built by the A., B. & A., the cost of reproducing the bridge is omitted from the A., B. & A. figures.² The Atlanta and West

¹ Texas Midland, 1 Val. Rep. 1, 16, quoted and followed, Kansas City Southern, 1 Val. Rep. 223, 245. The theory of the Commission is justified in the following words by Mr. Farrell:

"We have to proceed in a practical manner in estimating the cost of reproduction. If we cannot get in practically all cases the conditions which did exist when the railroad was constructed it would be absolutely wrong, according to my view, to estimate the cost of reproduction new so far as clearing and grubbing is concerned, upon conditions which existed when the railroad was constructed in any case, for this reason — we could not have uniformity. . . .

"We have to be practical, . . . we have to take present conditions which we can see, . . . we cannot uniformly apply the estimate of the cost of reproducing clearing and grubbing unless we do it upon present day conditions." Hearings, January, 1917, p. 39.

See also the further discussion, p. 40 and following. The attitude of the carriers is expressed by Mr. Brantley (p. 41):

"There is but one way to keep the record straight to get away from uncertainties and speculations, and that is to take the record of how much work of this kind was done in the original construction. . . . It is equally a speculation to assume the non-existence of the railroad and yet that the adjacent land is cleared land."

² A., B. & A. Brief, pp. 76, 239-245.

The following from the Commission's opinion in the Winston-Salem Southbound case, 1 Val. Rep. 187, 193, states a parallel situation:

"In constructing the carrier's railroad, it became necessary for it to cross under the Southern Railway at Lexington, and under the Seaboard Air Line Railway at Wadesboro, and also to install grade crossings with the Southern Railway at Winston-Salem and at Albemarle. As the Southbound Company was the junior carrier, the expense of these crossings was wholly borne by it. In the tentative valuation all costs borne by the Southbound Company have been included in the statement of original cost to date. . . .

"The carrier contends that if it be assumed for purposes of determining the cost of reproduction that other railroads exist as of valuation date, then as a matter of theory it must be assumed that the identical structures which the Southbound Company as the junior carrier was obliged to construct would likewise have to be constructed in reproduction.

"The method followed in the tentative valuation does in fact contemplate the assumed existence of the railroads as crossed, and gives full credit in the cost of repro-

Point is supposed to have built a bridge where sixty years later a line from Brunswick to then undeveloped coal and ore lands will cross! Small wonder that the necessity for preliminary surveys is eliminated. And yet this device commended itself to the Commission as "involving the minimum of conjecture, and as the only plan which in all its aspects is feasible and certain in practical application."¹

Hypothesis has also eliminated the contingencies allowance, as such, in the cost of reproduction. The claim for a contingencies allowance, in terms of a percentage of the cost of reproduction,² is based largely upon the analogy between the task of estimating cost before construction and that of estimating cost of "theoretical" reproduction:

When the construction of a railroad is under consideration it is customary for an engineer to estimate the amount of money it will be necessary to expend in building the property. Experience has shown that it is practically impossible, no matter how carefully such an estimate may have been made, to include all the items of expense which will be incurred in the work of construction. Additional expense is caused by omissions and unforeseen difficulties in the work of construction. Necessary materials are sometimes omitted. From soundings a cut may appear to be made up entirely of earth and the

duction estimates for whatever is shown to be owned by a carrier, or occupied and used by it, while showing, as a historical fact for whatever it may be worth, the expenditures in fact made by the carrier in original construction. The method commends itself as involving the minimum of conjecture, and as the only plan which in all its aspects is feasible and certain in practical application."

¹ Winston-Salem Southbound, 1 Val. Rep. 187, 194. But a telegraph line, built by the Texas Midland, and owned by the Western Union Telegraph Company, was included in the cost of reproduction of the Texas Midland. 1 Val. Rep. 1, 45. See Protest, A., B. & A., p. 13; Winston-Salem Southbound, p. 12, and Hearings, January, 1917, p. 138 and following. Mr. Farrell there (p. 144) concluded: "Any change from the present program might render it impossible for the engineers of the Commission to do with the degree of accuracy which the Supreme Court has said it is necessary for us to do our work, the thing under a different plan they would be required to do. Under the present plan they can give us all the facts, an estimate with some degree of accuracy, of what it would cost to reproduce the thing that is there today. But if you change the plan I am fearful that the result will be that they will not be able to give us information which will be at all reliable."

² See Railroad Valuation, pp. 47-50, and briefs and cases there cited; also Hearings, May, 1915, where Mr. Holbrook, of the Southern Pacific defined contingencies as "unforeseen, uninvestigated or indeterminate items of construction expense." P. 45.

estimate for excavating and digging is based upon this expectation. However, when the work is performed it is found that it contains a large boulder which it is necessary to cut through or entirely remove. This unforeseen condition lengthens the time allowed for construction and correspondingly increases the expense. Frequently quicksand is found where solid earth was expected. Numerous other instances of unforeseen difficulties could be cited which occur and which add to the total cost of the work. In order to provide for expenses of this kind the practice of including a certain sum for contingencies in estimates of the prospective cost of construction has been quite generally adopted.¹

The railroads have contended that, in reproduction, omissions would develop in the inventory, and further that unforeseen difficulties, such as occurred in construction, should be hypothetically anticipated, and that, therefore, to secure a figure fairly representative of reproduction cost, an estimate to take account of contingencies should be made.² The possibilities of "hidden quantities," and the nature of the "unforeseen difficulties" were explained at length.³ Even Director Prouty, who has developed a much more critical attitude toward carrier reproduction estimates than that shown in his handling of the Spokane case,⁴ acknowledged that in measuring quantities, "there are many cases where they must be guessed at."⁵ And in esti-

¹ Texas Midland, 1 Val. Rep. 1, 25.

The claim of the carrier that the inclusion of the "contingencies" allowance was "the settled practice" (Texas Midland Reply Brief, p. 166) was disposed of by the Commission in the following words:

"The chief insistence of the carriers in favor of this inclusion is that inasmuch as it has been commonly allowed in the past it should be made here. But this would by no means follow. Such an addition might perhaps be made in case of a superficial inventory, where omissions and oversights would be expected, but not in one made with greater care. Much would depend upon the method by which prices were determined. Nor can it be said that the methods and practices involved in the valuation of railroad properties in the past have yet reached that state of permanence which entitles them to the rank of authority." Texas Midland, 1 Val. Rep. 1, 146.

² Texas Midland Brief, pp. 693-699.

³ Hearings, March, 1917, pp. 168-289, the testimony of the carrier experts.

⁴ See for example his discussion, Hearings, March, 1917, pp. 282, 283 and compare the facts in the Spokane case, as developed in Railroad Valuation, p. 54. Railroad witnesses in the 1917 Hearing had cited an instance of a "peripatetic orchard" and of a mountain which "got up and advanced down into the cut."

⁵ Ibid., p. 281. Compare Texas Midland, 1 Val. Rep. 1, 144.

mating quantities the representatives of the Commission have been instructed to rely largely upon the carriers statements, supplemented by records, and tested by observation. The statements and records are accepted unless they appear "erroneous on their face."¹ But the Commission did not agree that any formal allowance should be made:

The road has been constructed. Every item which enters into the property is present and can be inventoried. Those things which are omitted in the estimate of original construction are all here in case of the completed property.²

The Commission continued:

What is true of omissions in the estimate of original cost is equally true of those unforeseen happenings and conditions which in preliminary estimates must be taken care of by an allowance for contingencies. The engineer in the making of his original estimate may overlook many of the difficulties to be encountered; the engineer in estimating cost of reproduction has before him every one of those difficulties. If the sounding rod struck what appeared to be solid rock but was in fact a boulder, and if for that reason the pier must be sunk twenty feet deeper, this is known to-day.³

¹ Texas Midland, 1 Val. Rep. 1, 26. The attorneys for the carrier declared that Mr. Prouty was inconsistent: "He refuses to take clearing and grubbing from existing records, and on the other hand, excludes contingencies unless . . . derived from records. . . ." Notes and Comments, p. 127.

² Texas Midland, 1 Val. Rep. 1, 143. It would not seem, however, that the example of the equipment (composed of large single units) is a fair one by which to establish the completeness of the entire inventory:

"It may be said, altho that claim has not been very clearly urged by the carriers, that it is impossible to enumerate all the items of property which enter into the construction of a railroad, and that some sum must be included to take care of inevitable omissions. While this might be so in case of an inventory hastily taken, it is not true of the inventories made by the Commission pursuant to the valuation act. To an extent the Commission's inventory is made in the first instance by the carrier and checked by the Commission. This is true of equipment. The carrier furnishes a list of its rolling stock of all kinds, and that list is verified by the representatives of the Commission. It is significant as bearing upon the accuracy of the work that up to the present time in no case has there been any dispute between the carriers and the Commission as to the units of equipment which the carrier owns. Further investigation by the Commission's engineers has shown that many such units which appeared upon the records of the carrier as in existence were no longer in service, and in some instances equipment has been identified which did not appear upon the records of the carrier; but in the end there has been a complete agreement between the carrier, the engineer, and the accountant, all approaching this subject from different points of view." Ibid.

For the carrier's stand, see Notes and Comments, pp. 127-129; and Carrier Valuation Brief of 1915, p. 105 and following.

Ibid., p. 144. The discussion is continued:

The "weather" contingency, the reality of which was recognized by Mr. Prouty who cited the repeated washouts of a portion of the Salt Lake route¹ has been compensated for by allowance in the unit prices established.² "No contractor would name a price which did not include all the elements of chance named above"—accidents, floods, washouts, strikes. "There would be no propriety in allowing a second time for contingencies of that class which have been once compensated for in the price applied."³ The question, says the Commission, is not what has been done in the past, but rather what ought to be done now. Preferring to give weight to the element of doubt at the specific point where doubt occurs, no allowance, as such, is made for contingencies.⁴

II. COST OF REPRODUCTION

The methods used to secure the figures presented in accordance with the foregoing hypothesis are described

"An instance was brought to attention where in the addition of a second track quicksand developed which required a large amount of expensive excavation, the replacing of solid earth where the quicksand had been, and the construction of an expensive mattress to be used in that connection. It was said that this was a contingency. So it was in the original construction of the property; but to-day the thing done in there and the cost of doing it will all be estimated in reproduction. No second allowance should be made by way of contingencies." P. 145.

¹ Hearings, December, 1917, pp. 146, 147. See Hearings, March, 1917, p. 184 for the coining of mud into a tunnel, "doubling cost," the result of a storm; and p. 259, for a mountain slide.

² Texas Midland, 1 Val. Rep. 1, 145-147.

³ Ibid., p. 147.

⁴ Texas Midland, 1 Val. Rep. 1, 147. At p. 26 it is said:

"The statement that no provision for contingencies has been made by us in this proceeding is therefore incorrect. The figure reported as cost of reproduction new is an estimate of the amount of money necessary to reproduce the identical property under valuation. The inventory is made with great care and the prices applied are arrived at after exhaustive study. Every necessary expense is taken into consideration."

"Since reproduction new is at best an estimate, it is apparent that an estimate arrived at upon a basis as outlined above is as liable to be too high as too low and that therefore there is no warrant for the addition of a definite amount to cover contingencies, but that any allowance of that kind which ought to be made should be and is taken care of in connection with particular items of property."

See also testimony of Mr. Worley, Hearings, March, 1917, p. 916.

at length in the Texas Midland case.¹ The aim has been to do a "common sense job," and everything asked of the carriers has been asked "for the purpose of getting a ninety-nine per cent inventory, rather than an eighty per cent inventory."² The Commission has sought to command the confidence of all parties. It has therefore rejected the original proposal that carrier schedules be checked by the Commission's engineers,³ tho this had been the typical procedure in the so-called state valuations.⁴ Instead the Commission has made the inventory, calling upon the carriers for needed information and assistance, and requesting the active participation of carrier employees, this decision being justified on the basis of authority and of economy.⁵ But the result has none the less been to pile estimate on average.

¹ 1 Val. Rep. 1, 7, 108-182 (Appendix 3). By reference, Appendix 3 may be made a part of subsequent tentative valuations (p. 7). The appendix is obviously based on Prouty, Memorandum.

The following is a brief, but adequate, description of the organization of the Valuation Work. Under Mr. Charles Prouty, formerly a member of the Commission and now Director of the Bureau (formerly the Division) of Valuation, the country is divided into five districts, each containing approximately 50,000 miles of line. At the headquarters of each district is a member of the Commission's Engineering Board, with a District Engineer, a District Accountant, and a Valuation Attorney who acts as supervisor of the land appraisals, and as legal adviser for the district. Each of these section heads works independently of the others; he is responsible only to Washington. When his work on a carrier is completed, the result is forwarded to the Valuation Bureau Headquarters, where the Valuation Analysts and assistants, bring the reports of the three sections into the form of the tentative valuations served on the carriers. The Director has also, as principal assistants, a Supervisor of Accounts, and a Solicitor. The five members of the Engineering Board constitute the intimate body of technical advisors. Obviously the decentralised organization is only possible because of the distinct cleavage of function. See Texas Midland, 1 Val. Rep. 1, 108, 160, 176.

² Quoted from remarks of Mr. Worley, of the Engineering Board, Hearings, October, 1913, pp. 10, 35.

³ Hearings, September, 1913, pp. 32, 33.

⁴ Railroad Valuation, pp. 50-53.

⁵ "An inventory of this character can only be prepared after an inspection of the property. Some representative of the Commission must either see the property which is included or must ascertain such facts as demonstrate the existence of that property to a reasonable certainty. If an inventory is filed by the carrier, it must be checked by the Commission to this degree of certainty, and this would mean that the work of filing the inventory would be duplicated by the work of subsequently checking the same inventory. It was felt that the total expense of preparing the inventory would be less if made by the Commission in the first instance with such assistance from the carrier as could

The engineering field work has been divided between different branches, the basis of division being the specialized skill required for the work of inventory. The road and track party, to which is attached a representative of the carrier as "pilot,"¹ measures and inventories the roadway and all structures except bridges over 12 feet long, and buildings. The bridge party, consisting of two engineers (and such additional men as may occasionally be needed), one the Commission's engineer, the other, the carrier's representative, measures bridges with over a 12-foot span. The mechanical and the building party are of similar composition: the one to deal with equipment, shop tools, machinery, and simple electrical installations; the other with buildings, including full and water stations. The inventory of complicated electrical plant is done by the electrical branch, and of signal apparatus, interlocking plants, etc., by the signal branch.² In the case of a very simple property the road and track party may inventory bridges and buildings, but in general the Commission has found that "where properties are at all complicated, the work can be more expeditiously, more satis-

properly be called for and granted. This method avoids the duplication of effort and secures an inventory which can be vouched for by the Commission and which also reflects the claims of the carrier itself, at the least total outlay by which a result of that character could be obtained." Texas Midland, 1 Val. Rep. 1, 110.

¹ His function is described:

"A representative of the carrier, ordinarily known as a pilot, accompanies each road-and-track party. This person is an engineer of experience and ability whose duty it is to point out the property to be inventoried and to see that it is properly measured, inventoried, and classified. Before beginning work he prepares himself by a careful examination of the records of the carrier, by going over the property in advance, and by conferring with others." Texas Midland, 1 Val. Rep. 1, 112. See also Hearings, January, 1917, pp. 35, 36.

² Manuals governing the field work of each branch are published in pamphlet form by the Commission: Instructions for the Field Work of the Roadway (Bridge, Building, Signal, Mechanical, Electrical) Branch of the Engineering Section, etc. See also Texas Midland, 1 Val. Rep. 1, 110-112.

The Railway Age (Railway Age Gazette) has from time to time published descriptions of the operations and organisation in the field. Vol. 55, p. 715; vol. 56, pp. 111, 320, 1531; vol. 57, p. 195; vol. 58, p. 1107; vol. 59, pp. 560, 569.

factorily, and more cheaply done by the several branches acting independently.”¹

The basis of the inventory is provided in the law: the classification of expenditures for road and equipment prescribed in the Commission’s accounting regulations. Such items of expenditure as would not be charged to grading, clearing, and grubbing for example, are grouped under Grading, etc.² The units of inventory are those “current in the purchase and sale of the property . . . or commonly used in construction contracts and settlements;” the individual tie; the gross ton of rails; the net ton of fastenings; the single car.³ But units of equipment of the same series are bulked in groups, as are standardized culverts, short trestles, and small structures generally. The ideal sought is detail “sufficient to enable the one who examines the report to form a fairly accurate judgment of the character and condition of the property.”⁴

That an inventory might be secured which permitted of such a “fairly accurate” judgment without at all constituting a “ninety-nine per cent inventory,” or even an “eighty per cent inventory” seems obvious. It is not the whole story to state that there has been “almost no complaint of omission . . . and comparatively little dispute as to quantities.”⁵ The procedure, both in the field and in the hearings, is such as to place the carriers at a strategic disadvantage. The government engineer is always in charge, and the burden of dissenting is placed upon the carrier.⁶ And in the hear-

¹ Texas Midland, 1 Val. Rep. 1, 110.

² Ibid., p. 114.

³ Ibid., p. 113.

⁴ Ibid., p. 113.

⁵ Ibid., p. 112. The railroads have all asked for the general “Contingencies Allowance.”

⁶ “Carbon copies of all field notes are furnished to the representative of the carrier, who signs the same as evidence that they have been correctly taken, so far as his obser-

ings, even tho the strict rules of evidence may not be applicable, and "no burden of proof is placed upon the carriers,"¹ as a practical matter the burden of proof does rest upon them.² They must attack data presented in mechanically correct tabulations by a subordinate agency of the body which is to make the final judgment. If they have argued in general terms it is because from a strategic point of view they can do little else.³

But the quantity reported by the Commission for each inventory unit is at best only an estimate, a more accurate estimate than those upon which the state appraisals have been predicated, perhaps, but none the less an estimate.⁴ The degree of error necessarily differs with the unit of plant measured or counted, depending upon the extent to which human judgment and not mechanical counting is significant.⁵ How great this error may be can only be determined by a qualified

vation goes. If the representative of the carrier dissents upon any point, such dissent is ministered upon the notes themselves at the time.

It is generally agreed between the bureau and the carrier that such notes shall be taken as correct, unless altered by the Commission upon notice to the carrier or unless objection is filed by the carrier within a limited time.

It will be seen, therefore, that this inventory is really the joint product of the carrier and the bureau, or at all events, that the Commission's valuation forces have fully considered everything which the carrier desires to point out or to say in the completion of the inventory." Texas Midland, 1 Val. Rep. 1, 112.

¹ Texas Midland Brief, p. 234.

² Prouty, Memorandum, p. 73. "The presumption should be that the work is right, and it should be incumbent upon the carrier to show error with reasonable certainty."

³ With this attitude, however, the Commission has exhibited little sympathy. Said Chairman Hall at the Hearings, March, 1917:

"Now this is the twelfth day of our hearing in this matter in which the full Commission has been sitting. The tentative reports at least have the merit of containing definite figures. The final report, the final Valuation, must contain definite figures. You say that the figures in the tentative report are wrong. We want to know the figures that are right, and thus far up to day, the 12th day of the hearing, we have not been furnished with those figures. What the Commission desires is something concrete. . . ." P. 342.

Compare Commissioner McChord:

"We have been delayed here with speeches and agreements and theories . . . let us have something practical." P. 61.

⁴ Railroad Valuation, pp. 94-96. See also Winston-Salem Southbound, 1 Val. Rep. 187, 192.

⁵ Texas Midland, 1 Val. Rep. 1, 144.

engineer. To point out the existence of the source of error is sufficient for the economist. The conspicuous case is, of course, the definition of standards and the classification of materials, doubly important, too, because of the necessary correlation with unit prices.¹ But the problem of estimating is by no means limited to grading.² The Commission's engineers have inventoried the ties (by classes) by counting the ties in two 600-foot sections in each mile;³ the weight, kind of material, brand and standard length of rail, whether new or relay, have been noted at least once in each mile;⁴ the "probable dimensions" of the accessible portions of bridges and the "probable penetration" of piles have been reported.⁵ Buildings have been inventoried on the basis of cubic contents, or the square feet in side wall or floor.⁶ And locomotives have been inventoried by the pound as in the Minnesota Rate cases.⁷

¹ Mr. Hunter McDonald, Chief Engineer of the N., C. & St. L. Ry. testified at the March, 1917, Hearings:

"Classification of material on any railroad is largely a matter of judgment on the part of the engineer. In some instances the actual quantities can be measured, where the stratification is absolute and well defined, but it is rarely the case that it can be measured by actual cross section, and arriving at a percentage is the only practical way to do it, and that is a question of judgment on the part of the engineer." P. 245.

See also Hearings, September, 1915, pp. 15-17; A., B. & A. Brief, pp. 147, 148; Notes and Comments, p. 264, and Texas Midland, 1 Val. Rep. 1, 39.

² See Railroad Valuation, pp. 57, 95, 139. Specifications for grading quantities are contained in Instructions, Roadway Branch, p. 10.

³ Ibid., p. 11.

⁴ Ibid.

⁵ Ibid., Bridge Branch, p. 14.

⁶ The following is Mr. Prouty's explanation:

Director Prouty: "Now I ought to say, for the information of the Commission . . . that we computed the value of buildings differently in different districts. Mr. Worley, for example, applies what is called the square foot method. That is to say he will inquire what it costs to produce a wall per square foot. . . . And so he determines the square-foot price of the floor and the roof. That is correct, is it not?"

Mr. Worley: "That is correct."

Director Prouty: "In the three eastern districts we apply what is called the cubic-foot method. We determine the cost of a building in that way. We determine the number of cubic feet in the building, and determine the price per cubic foot, and then in valuing buildings of the same type we simply determine the cubic feet in the building, and apply to the number of cubic feet, the price per cubic foot." Hearings, March, 1917, p. 920.

⁷ Railroad Valuation, p. 72.

But the inventory is only half the story. Before the cost of "theoretical reproduction" can be reported, unit prices must be applied to the quantities found. And it need hardly be emphasized at this point that, in the fixing of prices, judgment — or call it, expert opinion — is the ultimate determinant. This is inevitable from the nature of the case, since there must be a correlation of the specifications and the figures of cost.¹ And more than this, too, since the Commission's unit prices are for units in place, and cost of transportation, handling, storage, installation, and contingencies must be taken into account.²

The program of the Bureau of Valuation has already been stated: an attempt "to report . . . the cost of reproducing the property actually in existence under *present* conditions by *present* methods and at *present* prices."³ But altho the unit prices are reported as of June 30, 1914, the valuation date, they are not the exact prices at which the units were bought and sold, or at which contracts were signed, on that date. Such a figure might be so abnormally low, or so abnormally high, as not "in any sense . . . to represent normal or fair values."⁴ Instead the expressed purpose is to ascertain "normal prices."⁵ Is not the best measure of the cost of doing a piece of work on June 30, 1914, what that work did in fact cost during the years immediately preceding that date?⁶ Upon the assumption of an affirma-

¹ See Railroad Valuation, pp. 94, 95; Hearings, September, 1913, p. 30; and May, 1915, p. 96 and following.

But there has been no attempt to correlate the construction period and unit prices. See Texas Midland Brief, pp. 646, 647; Reply Brief, p. 66; and Durham, Comments . . . A., B. & A., p. 22.

² Texas Midland, 1 Val. Rep. 1, 81, 83, 136, 139; also Texas Midland Brief, pp. 648, 699.

³ Prouty, Memorandum, p. 6; *italics*, the writer's.

⁴ Winston-Salem Southbound, 1 Val. Rep. 187, 192, 193. Compare Texas Midland, *ibid.*, pp. 135-140. This is a substantial acceptance of the basis proposed by Mr. Maltbie, speaking for the Nat'l Ass'n Ry. Com'rs, Hearings, May, 1915, p. 99.

⁵ Texas Midland, 1 Val. Rep. 1, 137.

tive answer to this question (which may or may not be the correct answer — who can say ?) figures have been compiled which purport, on their face, to be correct to the final dollar.

A wide variety of supporting data has been sought by the Commission. The carriers have reported the actual prices paid for labor, and for materials and supplies, for five years (and in some instances, ten years) prior to the valuation date. These have sometimes been verified by the Commission's accountants, and sometimes manufacturers have been consulted to determine the prices at which standard materials have been furnished.¹ An average figure has then been calculated to furnish "the basis of the price applied by the Commission."²

All the information is reviewed by the engineers who finally fix the prices to be applied to the inventory quantities. These engineers are "men of experience and of judgment who have built, bought, and installed the kind of material or apparatus under consideration . . . practical men who bring to the question before them judgment ripened by experience . . . actuated by the sole desire of applying a proper price."³ Accordingly the

¹ Texas Midland, 1 Val. Rep. 1, 136.

The carriers have furnished the data in compliance with Valuation Order No. 14, of February 9, 1915: "Order, instructions, and forms pertaining to purchases of materials, prices paid, and rates of compensation paid for labor."

This order required every carrier to file a statement of the two largest purchases of each class of material for each calendar year from 1910 to 1914, inclusive, together with net prices paid. In the event two purchases per year had not been made, a statement of such purchases as might have been made was required. Information with respect to the period from 1905 to 1914, inclusive, and as many as four purchases per year were in some instances required. The statement required, among other things, information as to the purpose for which the material was used, the maker, his catalogue number or reference, name of the seller, and the freight charges actually paid. The carrier was also required to report the rates of compensation paid on each separate division for each calendar year, 1910-14, to all classes of employees. This rate of compensation was defined to be the usual and ordinary rate paid for the particular occupation, and required an average for each year obtained by taking the governing rate on the first day of January, April, July, and October in each year and dividing by four. *Ibid.*, pp. 35, 36; 136-139.

² *Ibid.*, p. 137.

³ *Ibid.*, p. 138.

cost data so laboriously gathered are not controlling, but their use depends upon observation and comparison; ultimately upon that expert judgment of which the Commission expressed so poor an opinion.¹ But it is the expert opinion of the Commission's employees. Said Mr. Prouty:

. . . We have declined to coöperate. When an inventory has been made up, which lists the property of the carrier by our engineers, I have insisted and I understand that my associates upon the division of valuation agree with me, that our engineer shall attach to the inventory his figures, and that he shall arrive at those prices by some independent process, and when his price has been once determined he should attach it to the inventory. Then we are glad to have him discuss prices with the engineer of the carrier, and we are glad to have him change his prices if he sees fit to do so in consequence of the discussion.²

Since the semi-coöoperative method of making the inventory has substantially estopped challenge of quantities, the burden of the carrier attack on the figures reported has been against the prices. The Texas Midland attorneys developed the fact that Mr. Worley did

¹ Texas Midland, 1 Val. Rep. 1, 136. A very vague explanation of the method of fixing upon unit prices, as given by Mr. Worley, is quoted in Benton and Farrell, Reply Brief, Kansas City Southern case, pp. 4-8. Mr. Worley declared that unit prices had been "matters of discussion" since the day the work started:

"They have been matters of discussion and conference between the members of the engineering board in session in Washington and other places, they have been matters of conference between the engineering board and director, between the engineering board, the director, and the accountants, between the engineering board and the central cost bureau; they have been matters of discussion between the individual members of the engineering board and the carriers in his particular districts. They are a matter of conference when it comes to fixing the unit prices between the member of the engineering board, the district accountant, sometimes the valuation attorney, and always the district engineer and the assistant district engineer, with the employee at the head of the section." P. 7.

² Hearings, January, 1917, p. 35.

Mr. Butler complained at the March, 1917, Hearings:

"We have never known, we do not know now, how the unit prices applied to our property were determined. We simply get a tentative valuation with certain unit prices." P. 211.

Mr. Brantley (Hearings, January, 1917, p. 26) expressed his dissatisfaction over the lack of coöperation in fixing unit prices. The joint determination of such prices had been proposed in Carrier Valuation Brief of 1915, p. 142; and the attorneys for the Texas Midland stated their feeling that a "painstaking and frank conference . . . would result in good." Notes and Comments, p. 247.

not know many of the conditions governing the construction projects from which he had secured his supporting data and which would account for the wide variations.¹ Presumably the figures offered a guide for future "reproduction" only when conditions were comparable, or when the peculiar conditions were taken into account in fixing upon unit prices.²

Experts were also introduced by the railroads, who fixed upon higher unit prices. In answer to these claims,

¹ These are discussed in detail, Texas Midland Brief, pp. 552-649.

The following statement purports to be briefly descriptive of the facts Mr. Worley read into the record. The attorneys for the Texas Midland stated that "the difficulty is in finding out what the facts say."

Account	Range of prices	Dates	Unit Price	
			I. C. C.	T.M.
Clearing.....	\$22.40-\$54.45 per acre	1901-12	25.00	\$35.00
Grubbing.....	22.50- 80.00 per acre	1902-12	40.00	52.00
Clearing and Grubbing.....	15.00- 50.00 per acre	1894-12	....	....
Earth (2 way).....	.11- .18 per cu. yd.	1901-12	15	18
Loose rock (2 way).....	.25- .37 per cu. yd.	1901-12	35	43
Solid rock (2 way).....	.55- .90 per cu. yd.	1901-12	65	97
Bois d'arc piling.....	.15- .37 per lin. ft.	1898-12	40	....
Treated pine piling.....	.25- .35 per lin. ft.	1901-14	35	....
Haul of piling.....	.01- .40 per lin. mile	1900-12	....	....
Framing br. timber.....	9.00- 25.25 per M. B. M.	1894-12	....	....
Concrete.....	5.20- 18.15 per cu. yd.	1905-12	9-11.30	15.00
Burnettised ties.....	.35- .66 each	1901-14	.56	.69
Relay rails.....	17.00- 26.00 per gr. ton	1909-13	24.00	29.50
Sand ballast.....	.02- .1085 per cu. yd.	1906-14	.15 $\frac{1}{2}$	.36
Crushed rock.....	.55- .80 per cu. yd.	1910-14	.66 $\frac{1}{2}$	.80
Laying track.....	125.00-650.00 per mile	1901-15	250.00	....
Train and Engine service..	115.00-377.00 per mile	1906-13	225.00	....
Full earth surfacing.....	190.00-482.00 per mile	1903-12	220.00	....
Installing turnouts.....	15.00- 50.00 each	1901-12	20.00	50.00

The unit prices shown in the last two columns are an addition to the table shown on p. 243 of Notes and Comments. They are taken from the Texas Midland Brief at the pages indicated in the original table.

² Thus, tho he claimed to base his price of \$250 per mile upon supporting data for track laying, the figures ranging from \$125 to \$650 per mile for work done between 1901 and 1915 over much of the country west of the Mississippi, "he could not state the weight or amount of rail laid, the number of switches per mile, number of bridges which might delay track laying nor conditions under which the work was done." Altho "all of the information was considered in determining his price," that price did not contemplate any "particular method" of track laying, being, as he thought, sufficient for hand or machine work. Texas Midland Brief, pp. 634, 635. These statements have been verified in the typewritten record.

Mr. Prouty insisted: "The presumption should be that the work is right, and it should be incumbent upon the carrier to show error with reasonable certainty."¹ The theory would seem to be that the testimony of even the most eminent expert witness hardly makes that show of scientific procedure which is created by arrays of cost figures, however incomparable and however irrelevant.² Nor does the respectability attach to opinions of railroad employees³ that attaches to the "judgment" of

¹ Prouty, Memorandum, p. 73. At pp. 65-70, Mr. Prouty indicates the basis of the attitude of the Bureau of Valuation, which "in the light of what it could see and forecast believed that it would be unwise to enter into any contest with the carrier in the production of opinion testimony." He continued (p. 67): "It seemed to us that the best evidence was found in the experience of the past. The fact speaks without prejudice. It cannot be varied to suit the inclination of the parties."

In Notes and Comments, pp. 239-241, it is shown that the carriers did not (as Mr. Prouty alleged) "contend that the only proper evidence of these prices is the opinion of an expert."

² The data depended upon by Mr. Worley were called "a promiscuous unassimilated mass of figures gathered from everywhere" (Texas Midland Reply Brief, p. 333), and "a heterogeneous mass of inconsistent data" (p. 347). The unit prices are discussed in detail, Texas Midland Brief, pp. 556-643; A., B. & A. Brief, pp. 159, 702. The Texas Midland summarizes its attack upon Mr. Worley's unit prices for grading in the following language:

"Much of the work he had never seen. He did not know the geographic or climatic conditions (Record, p. 805), he did not know the nature of the soil, he did not know whether or not the contractor made or lost money, he knew of no method of conversion by which the figures quoted for contracts on a two-way basis could be converted to the correlative figure on a one-way basis (Record, p. 807). . . . He made no investigation of the peculiarities of the grading work on the Texas Midland," etc. P. 333.

See Texas Midland, 1 Val. Rep. 1, 39, for discussion in detail of one and two-way work. See also Texas Midland Brief, pp. 576-643, for criticism of other unit prices, and the Protests, Texas Midland, pp. 17, 18; A., B. & A., p. 21; Kansas City Southern, pp. 20-30; N. O., T. & M., pp. 24-28.

³ Prouty, Memorandum, pp. 71, 77, where the Director points out that the engineers of the Santa Fe and St. Louis Southwestern were not disinterested witnesses.

"The prices established and approved in case of the Texas Midland must have a most important bearing upon the prices which are applied to these properties." P. 71.

See also the opinion of the Commission:

"The unreliability of mere opinion evidence is well understood by all those who have ever had experience with it. An opinion is personal to the man who gives it. It depends upon his education, his mental habit, his present mental state. It is influenced by his environment and often controlled by the objective point which he desires to reach. The same man may hold different opinions upon the same subject at different times."

Perhaps the most serious infirmity of opinion evidence is that the witness may be selected at the will of the one producing him. A fact must be established by those who have knowledge of it, who were present and saw it, for example, but an expert can be brought from the ends of the earth, and a dozen may be rejected until the right one is found. Given time and the money, almost any opinion can be had within certain limits." These paragraphs are taken from Prouty, Memorandum, p. 65.

"practical men," government employees instructed to be fair, who, having considered all the cost data and examined the work to be done "theoretically," "finally reach a price which in their judgment is right."¹ But whether unit prices fixed in one way or fixed in the other are more truly a measure of what it would cost to reproduce a railroad "theoretically," who can say? The Commission has been content to accept the Bureau's figures, the figures of the tentative valuation being made final except where the Bureau has later agreed that increases would be "fair."² But from the nature of the case the ultimate determinant is judgment, and the figures reported are only estimates. Any accuracy professed for them is largely specious.³

"Overhead charges" have been handled by the Bureau on conventional lines. For "general expenditures" and "engineering," resort has been had to the bulk percentage expedient of the state appraisals.⁴ Preliminary estimates based on a "synthetic" program which produced the costs of the essential preliminary organization have been abandoned in favor of the short cut,⁵ which, however, has been presented as an attempt to apply the test "applied in the development of prices, namely, the actual experience of the past."⁶ Do the facts justify the claim?

For general expenses, 1½ per cent of the road accounts except land has been fixed upon as "about right for the

¹ Prouty, Memorandum, p. 68. See, however, Notes and Comments, pp. 246, 247.

² Kansas City Southern, 1 Val. Rep. 223, 238, 254.

³ Railroad Valuation, p. 96.

⁴ Ibid., pp. 73, 95.

⁵ Texas Midland, 1 Val. Rep. 1, 29, 47.

⁶ Ibid., p. 142.

The Commission's Statistical Study is explained in detail, with illustrative charts, in Hearings, March, 1917, pp. 879-903, the testimony of Mr. D. E. Brown, the Supervisor of Accounts.

average case.”¹ This figure has been chosen after an examination of the costs in constructing four properties where the facts are known: the Virginian, a “fairly illustrative” case, 1.593; the Winston-Salem South-bound, where “careful review” by the accountants shows 1.271; the Las Vegas and Tonopah, an “independent company,” 1.224; and the Tonopah and Tide-water, “of recent construction,” 1.775.² The numerical average of these four sets of figures is 1.466, but it is impossible to say to what extent the Bureau has been guided by this fact.³ These figures are simply supporting data; independent judgment is assumed to fix upon the percentage of 1.5.⁴ It is not at all a question of “actual experience.”

The resort to typical roads, rather than to general average figures, is due to the unsatisfactory nature of the average figures. The study of 121 projects in different sections of the country, ranging from 2½ to 900 miles in length (total mileage: 9617), gave the following average percentages for the valuation districts:

Eastern	1.766
Southern.....	2.251
Central.....	1.362
Western.....	.838
Pacific.....	4.086
<hr/>	
Average.....	1.930

The abnormal variations represented by the Western and Pacific groups are readily explained: roads in the

¹ Prouty, Memorandum, p. 39.

General Expenditures include the following accounts of the Commission's classification of investment in road and equipment: Organization expenses; General officers and clerks; Law; Stationery and Printing; Taxes, other expenditures—general. For a discussion in detail of these and other “overhead charges,” see Memorandum on Overhead Charge in Valuation, published by the Presidents’ Conference, July 25, 1917.

² Prouty, Memorandum, p. 39.

³ Notes and Comments, p. 156.

⁴ Texas Midland. ¹ 30, 33; Kansas City Southern, 1 Val. Rep. 223, 257.

western group were built by parent companies, and many general expenses were borne by the latter; while the extended construction period of the Western Pacific threw the Pacific figures out of line.¹ Because no one knew, when the four roads were chosen for study as standards, "what the figures would show, and no attempt was made to support any preconceived theory, the sole desire being to ascertain the fact," the Commission believed the results obtained "fairly representative."² This was the answer to the carrier claim that, taking six other roads, as "typical" as those selected by the Commission, a figure between 4 and 7 could be sustained.³

The percentage for engineering, fixed upon after a study of the same 121 projects,⁴ is no more significant:

The amount found charged to engineering varied from 0.837 per cent to 9.732 per cent of the total amount shown as investment in road excluding land. In six instances the percentage for engineering exceeded 6 per cent; in ten instances it was between 5 and 6 per cent; in four instances it was below 1 per cent, and in sixteen instances between 1 and 2 per cent. In the balance of instances, eighty-five, it ranged from 2 to 5 per cent. The weighted average showed approximately 3.6 per cent.

Accordingly a maximum of 5 per cent and a minimum of 2 per cent have been set, tho it is left to the Com-

¹ Texas Midland, 1 Val. Rep. 1, 30.

² Ibid., p. 30. The Commission concluded:

"From what has been stated we are of the opinion that an estimate of 1½ per cent on all road accounts except land for general expenditures will do justice to the carrier." P. 31.

³ Notes and Comments, pp. 156, 157. The six roads were the Beaumont & G. N., 49 miles, 5.827 per cent; Crosbyton-Southplains, 40 miles, 4.434 per cent; Rocky Mountain & S. F., 107 miles, 5.498 per cent; Santa Fe, P. & P., 197 miles, 4.893 per cent; C. M. & Gary, 99 miles, 7.094 per cent; Western Pacific, 926 miles, 5.074 per cent.

⁴ The attorneys for the Texas Midland protested that 75 per cent of these projects represented subsidiary lines where it was safe to assume no charge had been made for the services of the Chief Engineer and his force, and showed that the Commission's accountant had made no inquiry on this score (Hearing, March, 1917, p. 901). Instances were cited where no such charges had been made. Notes and Comments, pp. 139-146. The figures too were based largely on accounts erected prior to 1907, when the Commission's uniform regulations were made effective. Ibid.

mission's engineer to determine the exact allowance in each case. Should he believe that there are "peculiar circumstances" to justify the use of a lower or a higher percentage, he is instructed to bring the case to the attention of the Bureau.¹

Here, perhaps, the carriers have again placed too great dependence upon the testimony of experts.² Mr. Charles Hansel even testified that the percentage method, which other railroad experts had approved,³ was neither proper nor accurate. Too many factors varied as between different properties.⁴ He proposed, by comparing the conditions governing the Virginian, where engineering cost was known, with conditions on the road under consideration, to estimate the reproduction cost of engineering on the latter. For the A., B. & A. he secured a figure of 8.55 per cent, an "unusual and extraordinary" figure for a road which he acknowledged to be "ordinary" and "normal."⁵ This result furnished the theme for Mr. Prouty's denunciation of expert opinion, repeated by the Commission in the Texas Midland case.⁶

The original figures compiled for the Texas Midland were built up on the synthetic basis before the decision

¹ Texas Midland, 1 Val. Rep. 1, 28.

² Figures compiled by the Presidents' Conference Committee, showing an average of 4.40 per cent were also introduced by the carriers, Prouty, Memorandum, p. 66. Mr. Newton of the C., B. & Q. introduced a synthetic estimate for the Texas Midland, Hearings, March, 1917, p. 280 and following; see Texas Midland Brief, p. 656.

³ See, for example, testimony of Mr. J. E. Willoughby, Chief Engineer of the Atlantic Coast Line, Hearings, March, 1917, p. 139. Mr. Willoughby placed the engineering figure at 5 per cent, for the Southeast.

⁴ Hearings, May, 1915, p. 42 and following; March, 1917, p. 816 and following; summarised, Notes and Comments, p. 249. See also Texas Midland Brief. At p. 651, it is said:

"A mere list of percentages of engineering cost of total construction cost without comparison of conditions in each case with those existing on the road under valuation is meaningless."

⁵ Prouty, Memorandum, p. 66; Notes and Comments, pp. 247-251.

⁶ Memorandum, p. 66; see comments of Mr. Brantley, A., B. & A. Brief, p. 172. Mr. Brantley insisted that the Commission's engineer working under Washington orders was applying a preconceived theory, whereas Mr. Hansel was "searching for the truth alone."

to resort to percentages had been made. But the result, translated into terms of percentage, gave 2.15 per cent, which Mr. Worley felt was an adequate allowance in view of the simple conditions governing the construction of the road.¹ The carrier claimed that a percentage of 5 or 6 would be more nearly adequate; while the Commission upon further consideration (the details of which are not made apparent) increased the percentage to 2½ per cent. Taken in connection with certain changes in the base figures, this gave a net increase in the "valuation" figures, from \$54,926, the tentative allowance, to \$58,773.² For the Winston-Salem Southbound, the allowance of 5.4 per cent was not protested,³ for the Kansas City Southern, 4 per cent was allowed over the carrier's protest.⁴

"Interest during construction" (a function of two variables: the theoretical rate of interest and the theoretical construction period) adds more hypothesis and estimate.⁵ When the Bureau found that an attempt to appraise the credit standing of each carrier led to a most delicate analysis, it resorted to hypothesis. Let the "reconstruction be done by a company possessing good credit and able to buy supplies at advantageous prices." Then "since a railroad with good credit has no difficulty during normal times in borrowing money at 4½ per cent . . . the rate of 6 per cent would be

¹ The carriers insisted, however, that with relatively inexpensive roadway construction costs, such as appeared in the Texas Midland reproduction, the greater was the percentage of engineering, due to the presence of overhead costs which did not vary. Said Mr. McDonald of the N., C. & St. L.: "As a general rule the greater the cost, the smaller the per cent where there are no other complicated conditions of construction." Hearings, March, 1917, p. 738. See also Hearings, May, 1915, p. 43 (Mr. Hansel); and A., B., & A. Brief, p. 170.

² Texas Midland, 1 Val. Rep. 1, 45.

³ Winston-Salem Southbound, 1 Val. Rep. 187, 209; see, however, Protests, A., B. & A., p. 27; Kansas City Southern, pp. 18, 19; and E., J. & E., pp. 25, 26.

⁴ Kansas City Southern, 1 Val. Rep. 223, 253.

⁵ Railroad Valuation, pp. 76-78.

ample to cover all incidental items of expense.”¹ And so 6 per cent has been chosen to be applied to all carriers, with the added result that upon this basis the cost of reproducing different properties is “fairly comparable.”²

Six per cent has been chosen after an examination of the sale of bonds of various kinds for the five years preceding June 30, 1914 had “led to the belief that this rate would be ample to cover not only the interest on the money but any brokerage which would usually be charged for the obtaining of the money.” Furthermore, “six per cent is the legal rate in a large section of this country where no other rate is specified.”³ At the preliminary conference of May, 1915, Mr. W. B. Bailey, the General Auditor of the Santa Fe had asked for 7 per cent as a minimum.⁴ Eight per cent was asked by the attorneys for the Texas Midland,⁵ but the rate of 6 per cent was used by the Kansas City Southern.⁶

The tentative valuation of the Texas Midland utilized the formula developed in previous appraisals for calculating the amount of interest: allowance was made for one half the construction period upon the total expenditures, exclusive of land and interest.⁷ Carrier

¹ Texas Midland, 1 Val. Rep. 1, 154.

² Ibid., p. 31; Kansas City Southern, 1 Val. Rep. 223, 257.

³ Texas Midland, 1 Val. Rep. 1, 154.

In their Kansas City Southern Brief, Messrs. Benton and Farrell cite the fact that 6 per cent is the legal rate of interest in Missouri. P. 9.

⁴ Hearings, May, 1915. Mr. Bailey said:

“Measured by principles recognized in court decisions, after giving due weight to all the conditions surrounding railway operations, and the well recognized fact that interest rates on all classes of railway securities have shown an upward tendency for some years past, 7 per cent is the minimum rate that should be used in determining interest during construction.” P. 51. See also Carrier Valuation Brief of 1915, p. 111.

⁵ Brief, p. 693. It was insisted that the Texas Midland, which had been unprofitable was not a “safe” investment, pp. 690-692.

⁶ Brief, pp. 219-221.

⁷ Railroad Valuation, p. 77; Kansas City Southern, 1 Val. Rep. 223, 257.

The failure to charge interest against land (the purchase of which is an obvious first cost) is due to adherence to the letter of the opinion in the Minnesota Rate cases: “it

experts evolved much more intricate and more ingenious formulae,¹ and Mr. Prouty, in his Memorandum, expressed the opinion that a fairer basis would be to calculate interest for half the construction period plus three months on construction accounts, and for three months on the equipment accounts.² Changes in the Texas Midland, Winston-Salem Southbound and Kansas City Southern figures were made upon this basis.³

The construction period depends entirely upon the opinion of the Commission's engineer, upon his reproduction program, and thus ultimately upon the reproduction hypothesis. Since the reproduction represents, theoretically, an entirely new project, the actual construction period is not of binding significance. The Bureau engineer has decided upon the period within which the work might be economically done, recognizing the usual delays due to labor and market conditions, but barring delays due to financial troubles, etc. And his opinion has governed.⁴

III. DEPRECIATION

Cost of reproduction less depreciation introduces new elements into the hypothesis. The railroad, "theoretically reproduced" in a new condition, is next (and immediately) theoretically worn to the age and condition of the existing road and equipment.⁵ Not that cost of

was error to add to the amount taken as the present value of the lands, the further sums . . . interest during construction." 230 U. S. 352, 455. See Hearings, December, 1917, pp. 17, 128 (Mr. Farrell); Texas Midland Brief, p. 681; A., B. & A. Brief, p. 637; Kansas City Southern Brief, p. 220; and the individual Protests.

¹ Texas Midland Brief, pp. 687-689, citing testimony of Mr. A. W. Newton, Hearings, March, 1917, p. 298; and of Mr. A. L. Conrad, p. 306.

² Pp. 45-47. There is more extended discussion in the Texas Midland opinion, 1 Val. Rep. 1, 155-158.

³ Ibid., pp. 1, 33, 196, 257.

⁴ Texas Midland, 1 Val. Rep. 1, 32; Kansas City Southern, 1 Val. Rep. 223, 256.

⁵ The following excerpt from the A., B. & A. Hearings is quoted in the A., B. & A. Brief, pp. 330, 331:

Mr. Brantley: "Well don't you think it is rather a contradictory statement to say that on June 30, 1914, the property had just been completed new, and the cost to re-

reproduction less depreciation reproduces the railroad with second hand materials. Where, for example, can one find "the millions of second hand ties"—unless, to be sure, they are made available by the "mental obliteration" of the existing roadbed?¹ Nor is reproduction cost determined in terms of the selling price of second hand materials.² On the contrary, cost of reproduction less depreciation seeks to measure how much of the hypothetical present investment (cost of reproduction new) remains unimpaired after the new plant units are assumed to be worn and aged to the condition of the existing units.

Appraisal of accrued depreciation, or the determination of hypothetical depreciation measured in terms of accrued depreciation, is much complicated by the fact that obsolescence ("functional depreciation") is so important a consideration in railroad operations. Progress of the arts has quickened the force of the inevitable physical wasting. "The steel bridge has been removed because it could no longer carry the heavier rolling stock which modern methods of operation have rendered imperative. Cars and engines have been discarded, not for the reason that further repairs could not be made, but rather because the type had become obsolete."³

produce is \$22,546,132, and that on the same data, it is in a depreciated condition . . . \$17,960,584?"

Mr. Jones: "Why there is some theory in the proposition, of course, and the theory is that you are reproducing it on that basis — you reproduce it new, and that theory, of course, is an estimate on certain assumptions. Part of the property is there and has been there, and depreciation is estimated on the basis of what is there."

¹ Condition Per Cent, W. G. Brantley, pp. 11, 32; see also A., B. & A. Brief, pp. 454, 461, 547, 548, and testimony of Mr. C. S. Churchill of the Norfolk & Western, quoted, *ibid.*, p. 523.

² Texas Midland, 1 Val. Rep. 1, 69, 70.

³ Texas Midland, 1 Val. Rep. 1, 127; see also Hearings, June, 1917; and especially, the testimony of Mr. D. F. Crawford, general manager of the Pennsylvania Lines West, p. 21. The carrier attorneys have sought, at great length, to demonstrate, what no one has seemed disposed to deny, that retirements of equipment have been made for inadequacy, and that seldom, except "to keep a series complete," has equipment been replaced in kind.

Because the railroad business is in this "dynamic" state, the data upon which to calculate for the future are rendered slender. There is, for example, substantially no information upon which to gauge the probable working life of steel equipment. Surely experience with wooden cars is inconclusive. It is even conceivable, as says the Commission, that electricity may supplant steam as a motive power, or that some discovery may do away with both steam and electricity.¹ "Total life" calculations from the nature of the case, therefore, involve prophecy, and introduce a second source of uncertainty into the appraisal of depreciation.²

The Commission has met the difficulty created by the importance of obsolescence by giving the benefit of the doubt to the railroad. Only imminent functional depreciation is considered. If a bridge is too light for the equipment, and should be removed, or if station facilities are too small for the business, "the depreciation has already taken place." Likewise, "if for example the railroad has already begun to remove bridges of a similar type, because they are too light, this fact must be considered." Or, "if, while the station may do for a few years to come, plans are already being considered for its replacement, the architect must not close his eyes to this circumstance, and look only to the physical condition of the property." But only that functional depreciation which can be "accurately forecast" is considered. There must be no resort to "speculation."³

¹ Texas Midland, 1 Val. Rep. 1, 127.

² See Railroad Valuation, p. 78 and following, for an elaboration of the discussion here so briefly outlined.

³ Texas Midland, 1 Val. Rep. 1, 127, 128; see also the discussion by Messrs. Brantley and Prouty, Hearings, September, 1915, p. 48. Mr. Wells, the general manager of the Texas Midland, introduced the instance of a bridge on his road in which, he insisted, there could be no functional depreciation since it was capable of handling much heavier loads than in all probability would ever be turned over to the road. Hearings, March, 1917, p. 858. In Condition Per Cent, Mr. Brantley asserted (but did not prove) that there was "no justification" for considering possible obsolescence of equipment in fixing a figure of depreciation, p. 17.

So, for example, neither excavation in cuts or tunnels, nor embankments, have been depreciated, altho it is quite within the realm of probabilities that changes of line in curvature elimination or grade reduction, such as those which gave rise to the Kansas City Southern controversy,¹ may be of importance in the future, as in the past.

Even where standard normal life figures have been promulgated, recognition of the fact that maintenance and service factors necessarily govern the individual case has led the Commission to permit its engineer to fix the total life for items of plant inspected.² The logic of this practice is evident enough when it is realized that the standard figure is itself only an average "estimate," based upon "observation," and "opinion," and a great "amount of study . . . mainly in the way of collecting statistics."³ How the figures reported in the Engineering Board Memorandum were fixed upon is perhaps adequately explained by the Commission:

It has been said that the average life of steel bridges in this country has not exceeded 30 years. This may be true; our studies would indicate that some comparatively short period would represent the active service life of that structure; but it is also perfectly evident that this has been due, not to the actual wearing out of the bridge, but to its inadequacy. It is further not apparent that the same cause will be operative to the same extent in the future.

¹ Kansas City Southern Ry. Co. v. U. S., 231 U. S. 423. See also Mr. Prouty's discussion of the surplus, Eastern Advance case of 1910, 20 I. C. C. 243, 271, quoted, Railroad Valuation, p. 116.

² "Let it now be assumed that the same kind of a structure which has been in place for 30 years is under inspection. Observation shows that this structure, either through lack of proper maintenance or due to its location or from some accident of its use, is badly corroded and otherwise worn. If the same rate of depreciation continues for another 10 years the structure must be replaced. In this case the engineer would reduce the probable life from 70 years to 40 years; the bridge would be three-fourths worn out and its condition per cent would be 25/100.

Upon the other hand, an observation of this structure might show that it had been perfectly maintained and at the end of 30 years was apparently as good as at the beginning. The engineer might feel that this bridge was likely to continue in service for more than another 40 years, and in that event he might increase the total life as a result of his inspection from 70 to 80 years. The condition in this event would be not 40/70 but 50/80." Texas Midland, 1 Val. Rep. 1, 129.

³ Ibid., p. 126.

Thirty years is not, therefore, used as the total life by which steel bridges are to be depreciated. There is no way in which a satisfactory total life can be fixed for a structure of this character, but the engineers have decided that, taking all things into account, 70 years will probably fairly represent that period; certainly it is sufficiently long for an average life, and this figure for total life is used in the depreciation of steel bridges.¹

And, upon the same basis, concrete and masonry (the use of the one being substantially in an experimental stage, so far as length of life is concerned) are assigned a normal life of 100 years; timber structures, of 50 years; cast iron culvert pipe, a normal life of 80 years, and other steel or iron pipe, of 30 years.² Rails are held normally to have two cycles of life: new to relay; and relay to scrap. The first cycle for a particular carrier (or for a particular division of the same carrier) is determined by a statistical study of rail renewals; the second cycle, on the basis of 50 years, etc., etc.³ How conclusive this study of rail renewals may be is indicated by the contentions in the Texas Midland case. Twenty-five years was originally fixed upon by the Commission's engineers. Mr. Wells, the General Manager, claimed 80 years, but the tentative valuation reported figures based upon the 25-year normal life. After conferences, the Bureau recommended an increase to 40 years, and figures calculated on this hypothesis were made "final" by the Commission's order, which recognized that "no definite figure can be named with absolute certainty."⁴

The inventory inspection has served to set the actual life standard used (where the normal has been departed

¹ Texas Midland, 1 Val. Rep. 1, 128.

² Engineering Board Memorandum, No. 226, *ibid.*, p. 184. The same normal life (100 years) is assigned to masonry in such different structures as tunnels, culverts, piers and buildings.

³ *Ibid.* It is provided also that rail originally laid new in side tracks, and to be used in this service until scrap, shall be given a normal life of 75 years.

⁴ *Ibid.*, p. 52. The opposing contentions are discussed, Hearings, March, 1917, pp. 855, 872.

from) and has furnished the data from which the cost of reproduction less depreciation figures have been calculated. Instructions provide for careful and detailed notes of observation covering the age, wear and tear, maintenance and probable service life of the inventory units.¹ Some short cuts have been invoked. Where renewals have become uniform in quality and quantity, the service condition (i. e., the percentage of cost of reproduction now reported as cost of reproduction less depreciation) of ties "shall be considered as 50 per cent," while, under similar conditions, for rails in yards and for frogs and switches "a service condition of 50 per cent may be used."² All locomotives and all passenger cars are inspected, but "ordinarily not less than 10 per cent" of the freight cars ("and as many more as may be necessary to furnish a fair basis"), in order to secure a standard of condition to be applied to the entire series.³ Splice bars and bolts are "depreciated in

¹ Instructions for Field Work, etc., Roadway Branch, p. 8; Bridge Branch, p. 10; Building Branch, p. 10, etc. For ballast "no mortality tables or statistical data were available," and entire resort was had to observation. Texas Midland, 1 Val. Rep. 1, 83.

² Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 184.

³ Instructions for Field Work, etc., Mechanical and Electrical Branch, p. 10; see Hearings, January, 1917, p. 175; March, 1917, p. 861; and Protest, N. O., T. & M., p. 17.

For equipment, which by repairs and renewals, many witnesses (Mr. Julius Krutschmitt, Hearings, March, 1917, pp. 309-323; Mr. J. E. Muhlfeld, p. 743; Mr. Harry T. Bentley, p. 803; Mr. C. E. Chambers, p. 763) testified could be indefinitely continued in service, and for which therefore they alleged that it was impossible (especially in view of the instructions of the Commission to ignore all except "imminent" obsolescence) to fix a total life, the Commission has fixed a "weighted average condition per cent":

"While the life of the car itself may be indefinitely prolonged, the different parts of that car wear out and must be replaced. The car is therefore divided into three such parts, the trucks, the underframe, and the body, and each one of these parts is depreciated by itself. The three are then combined into a weighted average from which the condition per cent of the car is determined. The weighted average may be taken itself as the condition per cent or may be reduced if the type of the car is such that its use will not be continued in the future.

"The same rule is applied to locomotives and other rolling stock and also in a degree to certain buildings and structures." Texas Midland, 1 Val. Rep. 1, 53; compare testimony of Mr. Prouty, Hearings, March, 1917, p. 861.

An invalid objection is raised to this method by Mr. Brantley (Condition Per Cent, p. 17) alleging that "inconsistent results . . . will depend upon the date of the valuation," on account of additions by shopping, etc.

cycles on the same basis as the rail with which they are used"; spikes, "on the same basis as the ties."¹ And, altho it is stated as a governing "principle" that labor depreciates with the items of property of which it is a part, engineering, largely a labor cost, is not depreciated.²

The carriers have attacked, not the statistical adequacy of the depreciation figures, but the premises upon which the Commission's engineers have worked, and upon which, therefore, the depreciation figures are predicated.³ The difference is one of fundamental definition.⁴ "The witnesses called by the carriers — men of candor, ability and experience — while fully recognizing deterioration from age and use and the necessity of repairs and replacements of perishable elements, state that *in the absence of deferred maintenance, there is no depreciation.*"⁵ Deterioration is not depreciation; de-

¹ Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 184, 185.

² Ibid., pp. 183, 151. The other overheads are depreciated (p. 153); tho the reason assigned for failure to depreciate engineering (a cost spread over the whole of a depreciated plant), that of difficulty, would seem to apply with equal validity.

³ The Kansas City Southern, "solely for the purpose of comparison with the results reported by the Commission," since the carrier denied "the right of the Commission to deduct any sum or amount whatsoever from the Cost of Reproduction New," and insisted "that there was no depreciation as of June 30, 1914," introduced a table comparing a "carrier's Condition Per Cent" (relating "to different pieces or elements of the railroad property when considered separately and not as a part of a going concern") and the "Commission's Tentative Condition Per Cent" Protest, pp. 43-45. For 25 of the 30 accounts the carrier figures were higher than the Commission's figures, and for 4 of the remaining 5 the difference was less than 2 per cent. For 9 of the 25 accounts, the difference was 5 per cent or under, for 7, 6-10 per cent; for 3, 11-15 per cent; for 3, 21-25 per cent; for 1, 32 per cent, and for 1, 34 per cent. In terms of dollars, the differences would be more considerable, since applied to higher carrier figures.

⁴ Texas Midland Brief, p. 743; Texas Midland, 1 Val. Rep. 1, 48.

⁵ Texas Midland Brief, p. 743, also p. 247. The most notable witness was Mr. Julius Kruttschnitt, Hearings, March, 1917, beginning at p. 309. The following excerpt from his testimony is typical:

Mr. Brantley: "Mr. Kruttschnitt, as a maintenance man, I would like to ask you this question. If a government inspector went over your road and reported, for instance, that your track, that is, the ties and rails and so forth, was in 80 per cent condition or

rioration exists only in simple properties, there being no depreciation in a composite property, say the track, consisting of partially worn (deteriorated) rails, ties, fastenings, etc., unless repairs and replacements have been neglected. The whole is something more than the sum of its parts.¹

The carrier interests, using the fundamental definitions of depreciation and capacity for service promulgated by the Commission's engineers, have sought to apply these definitions to their own depreciation concept. The Commission's definition of depreciation — "the lessening in worth of physical property due to use or other causes"² is unfortunate, since, in a going concern where the units of plant do not come on the market as second hand, depreciation measures, not a lessening of worth ("value," in the sense of selling price), but the portion of the investment used up in furnishing past services.³ The carriers have therefore quite justly

85 per cent condition, what would you conclude that he had found with respect to your obligation of maintenance — that you had neglected it for a year or two?"

Mr. Kruttschnitt: "Fifteen per cent deferred maintenance is a great deal, a very great deal, according to the figures read out here. It is a year and a half maintenance on one system of ours and a year and a quarter on the other. Knowing our system as I do, I should be very skeptical, and should, if permitted, confer with him, and ask 'I want you to show me how you have reached this conclusion.' Assuming that our track had a million ties in it, 15 per cent depreciation or deferred maintenance would mean that our officers had failed to put in 150,000 ties that they should have put in, and I should ask the inspector to walk over the track with me and show me the ties that he thought ought to come out. If he did so I should be much disappointed because our people had not obeyed instructions, but I could not find any fault with his conclusion. On the other hand, if he could not show them I should conclude that he was in error.

Mr. Brantley: "So that as a maintenance man you would understand his statement that your track was in 85 per cent condition to mean that there was 15 per cent there of neglected maintenance?"

Mr. Kruttschnitt: "Yes."

Director Prouty: "You could not put any other construction on it?"

Mr. Kruttschnitt: "No. I cannot conceive what other construction I could put on the language." P. 316.

¹ See Railroad Valuation, pp. 122-124, and especially the excerpts there quoted from the Carrier Valuation Brief of 1915, pp. 162, 166, 231-237; the Protests of the individual carriers, Texas Midland, pp. 24, 25, A., B. & A., pp. 66-68, 80; and Hearings, September, 1915, p. 35.

² Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 183; see also the discussion, p. 125 and following.

³ Depreciation is thus the accounting recognition of the "ripening" into product of a part of the savings embodied in the plant: an adequately accumulated depreciation

maintained that the Commission has enunciated a definition in terms of worth, or value, only to report figures in terms of a loss of service units, or of the exhaustion of "capacity for service," itself an ambiguous phrase.¹ This ambiguity, also, the carrier has hit upon. "A locomotive twenty years old . . . will pull the same load,"² and the track composed of half worn materials possesses as much capacity for service (i. e., as many trains can be run over it per day) as an entirely new track.³ "It would be folly and waste to attempt to have all of the parts new all the time."⁴ Its "value in use" is as great as that of a new track.⁵ "The value of

reserve measures the extent to which the "ripening" process has gone; the difference between investment and this total accumulation measures unimpaired investment. See Railroad Valuation, pp. 117, 118.

Mr. Jones, the Commission's District Engineer in charge of the A., B. & A. work defined depreciation as "expired cost." Quoted, A., B. & A. Brief, p. 453.

¹ Texas Midland Brief, p. 743. Mr. Brantley had, however, defined depreciation as "the loss in service life." Hearings, May, 1915, p. 85.

² Texas Midland Brief, p. 730.

³ Condition Per Cent, W. G. Brantley, p. 23, also pp. 8, 9.

This meaning of capacity for service is not the meaning attached to the words by the Commission. This should be clear from the explanation:

"The bureau has treated depreciation as the exhaustion of capacity for service. It has inquired how much of such capacity existed when new, what part still remains. It states the remaining capacity as a fraction of which the total is the denominator and the part remaining the numerator. Taking cost of reproduction new the depreciation which has already accrued is subtracted, due consideration being given to salvage or scrap when this exists, and the remainder is given as cost of reproduction less depreciation." Texas Midland, 1 Val. Rep. 1.

⁴ Texas Midland Brief, p. 744; see discussion by Mr. Brantley, Hearings, May, 1915, p. 77 to the same effect.

⁵ Mr. Brantley, ibid., p. 67, cites the Backus case, where the Supreme Court said, 154 U. S. 430, "And when the statute provides that such property shall be assessed at its true 'cash value' it means to require that it shall be assessed at the value which it has as used and by reason of its use." He then continues, "We are of the opinion that the value to be ascertained is the value of the property as used and by reason of its use. If this be sound, it would follow that the depreciation to be ascertained in 'cost of reproduction less depreciation' is that deterioration in physical property whereby its value in use is affected."

In his Condition Per Cent, p. 10, Mr. Brantley said:

"A railroad property cannot be maintained and its full 'capacity for service' continued, except by a constant and continuous replacement of its various plant units. The thing sought is not a continuous condition of newness for each plant unit, but is a continuous condition of full and complete 'capacity for service.' A plant unit with its 'full capacity for service' existing at the date of valuation, cannot be said to be depreciated because its 'capacity for service' will expire two, four, eight or twenty years hence. Its 'full capacity for service' existing on valuation date, there is no depreciation then existing, and the fact being that whenever its 'capacity for service' ends, the

the investment is measured by the service that the combination of the various plant units in use can render, and so long as this service continues complete for the purposes desired, there is no loss in worth of investment, and hence no depreciation."¹ In "normal service condition" the track, composed of deteriorated simple properties, possesses its "full capacity for service"; and the same is true of adequately maintained equipment and structures.² In lieu of the "impossible guessing about the future life of a property," the carriers would establish "a proper standard of operating conditions for each railroad property," depreciation to be noted only to the extent to which the owner has allowed the property to depart from that standard of unity or 100 per cent.³ Plant worn to the normal state of depre-

carrier will not be called upon to make any new investment of capital in order to obtain a new plant unit to take its place, but may charge the cost of same to operating expenses, such future depreciation cannot affect the value of the investment on the date of valuation."

¹ Condition Per Cent, p. 7. See also *Protests, Individual Carriers*.

² Ibid., p. 32. See also A., B. & A. Brief, p. 527; and Texas Midland Brief, pp. 718, (ties); 724 (equipment); 725 (bridges, trestles, and structures). In Condition Per Cent, Mr. Brantley even insisted that replacements caused by obsolescence involved "no suggestion of loss of capacity for service," p. 15.

³ Hearings, September, 1915, p. 44; also Texas Midland Brief, p. 722, where, premised upon Mr. Kruttschnitt's testimony, it is stated, "The same standard, that is unity of 100 per cent, should be used for all railroads and the principles to be followed are general and apply equally well to the Pennsylvania, New York Central, A., B. & A., Texas Midland, or any other railroad." The proposed process of determination can be given in Mr. Kruttschnitt's words:

"The questions asked by the Commissioners evidence the difficulty they seem to encounter in prescribing what is the proper standard of maintenance as to ties — that might be made general; I simply take ties as an illustration — to which the condition of roads under valuation should be referred. The same standard — that is, unity, or 100 per cent — should be used for all roads and the principles to be followed are general and apply equally well to the Pennsylvania, New York Central, A., B. & A., Texas Midland, or any other road, and is the method I have used on more than one occasion when reporting on roads the purchase of which was under consideration by our company.

"1. Determine total number of ties in the track to be valued.

"2. Determine, preferably at the time just after the annual renewals have been completed, how many ties remain in the track that should be removed at that time. This count to embrace either the entire mileage or typical miles from which the count on the whole road could be deduced.

"3. Determine the average life of ties from the records of the carrier to be valued, or if these are defective, determine the information from the best available sources.

"For illustration, let us assume that there are 1,000,000 ties in the road to be valued, and that their average life is 10 years, from which it follows that depreciation will be

ciation (or what the railroads call deterioration) would, if maintained to the standard set, be reported as undepreciated. Cost of reproduction new and cost of reproduction less depreciation coincide.¹ So runs the carrier plea.

But all this assumes that maintenance in a state of working efficiency is maintenance of the investment. Investment (or hypothetical investment, cost of reproduction) is made in terms of dollars, and can only be measured in terms of dollars. Maintenance of the investment is attained through "putting earnings back into the property" equal to the amount of original investment used up in furnishing current services, however true it may be that a state of working efficiency (ability to turn out ton-miles in a given period) has been the ideal sought by the engineer to whom the financier has delegated the problem of establishing operating and maintenance standards. But the cost of much existing railroad plant has been charged to operating expenses and maintenance in the past. Extensions and equipment purchases have been financed out of earnings. It is

fully offset and arrested if the annual renewals are substantially 100,000 ties. If on inspection and count the conclusion is reached that the number of ties to be removed is negligible, it *proves absolutely*, without further relying on the judgment or estimates of any inspector, that all necessary renewals have been made, depreciation fully arrested, and the condition of the ties standard, or 100 per cent.

"4. If actual count shows that 50,000 ties should be removed after annual renewals have been made, it shows that the unarrested depreciation is 50,000 divided by 1,000,000 or 5 per cent. If the number of ties to be removed amounts to 175,000, the depreciation is 175,000 divided by 1,000,000, or 17½ per cent. If the number to be removed is 500,000, the depreciation is 500,000 divided by 1,000,000, or 50 per cent."

¹ Mr. Brantley summarized his contention:

"As to any piece of property which could not on the date of valuation be reproduced under a rational and reasonable engineering program, for less than its cost new . . . that the cost of reproduction less depreciation must be the same figure as the figure of cost new." A., B. & A. Brief, p. 439. He had previously said, p. 439:

"The carriers have for four years been combatting this theory. Their contention is that the direction given the Commission by the valuation act is to report, not two figures but one figure, and that a cost figure. In other words, that the act directs the Commission to ascertain first the cost of reproduction new of the property, which is a *cost* figure, and then to ascertain the cost of reproducing it in its existing condition, which involves a consideration of how much less than new cost, if any, the property can be reproduced for because of the existence of depreciation, if any."

entirely possible that, in an entirely haphazard manner, the level of unimpaired savings embodied in the total plant may even have been increased, tho a state of working efficiency has been the ideal actually sought.¹

It is recognized, moreover, that, when a large and varied plant, such as a railroad, is worn to a state of normal depreciation ("deterioration"), a formal depreciation reserve is not needed except for clearer exhibition of the facts.² Until formal insistence on the part of the Commission, against which vigorous protest was made by carrier representatives, depreciation reserves for equipment were rare indeed.³ Bookkeeping was simplified by charging replacements to operating expense (maintenance) in preference to setting up a depreciation reserve, against which replacements should be charged. The effect of this confusing short cut has been to create, in the minds of some railroad men, the idea that they have a "right" to make needed replacements out of current earnings; that the entire cost of a new rail or car bought in 1915 is a part of the cost of producing transportation in 1915. As a matter of fact,

¹ See discussion at length, Railroad Valuation, pp. 108-124; and compare testimony of Mr. Kruttschnitt, Hearings, March, 1917, p. 314; of Mr. A. H. Plant, comptroller of the Southern Railway, *ibid.*, p. 843. Mr. Plant said:

"Before the depreciation account was born, on the Southern Railway, we realized the necessity for taking care of our maintenance and retirements, and we really had in practice a depreciation not determined, however, as scientifically as subsequently determined by the Commission. When we retired a car on the Southern, we charged the cost to replace it with *modern* car to operating expenses, and in that way we did practically what we are doing now under the Commission's depreciation rule. I was quite anxious after the rule was promulgated by the Commission, to see how the two methods agreed, and I went back and applied the Commission's rule to a period back of the time it was promulgated, and compared it with the results I obtained under the Southern's old method and it surprised me to find the results were very nearly the same."

² Railroad Valuation, pp. 109, 119; see the extended discussion by Messrs. A. A. Young, J. S. Davis, John Bauer, and J. C. Bonbright, "Depreciation and Rate Control," Quarterly Journal of Economics, vol. 28, p. 634; vol. 29, p. 362; and vol. 30, p. 546. The writer accepts the reasoning of Professor Davis. The concept of the "useless" depreciation reserve (useless because permanent) is referred to in the A., B. & A. Brief, p. 515.

³ See, for example, three articles by William Mahl, Railroad Gazette, vol. 43, p. 418; Railway Age Gazette, vol. 48, pp. 440, 1249.

the cost of the old rail (not the cost of the new rail which represents new investment) was properly chargeable against the cost of producing transportation throughout its service life. The cost of the *new* rail is not significant for cost of past service. Practice omitted the formal credit to depreciation reserve, and, if attending to the detail at all, assumed that the amounts spent for maintenance and replacements balanced the accruing depreciation. But the fundamental reasoning reverts to the place in the whole productive process of machinery, of capital goods — of which the railroad, properly considered, is a typical illustration. The whole case is granted when it is acknowledged that "accrued deterioration necessarily exists in any well maintained railroad."¹ Railroad plant, half worn out, occupies the same economic position as the half worn pump and pipes of a water plant.² That portion of its cost properly assignable as cost of producing past services has been used up. The adequacy or inadequacy of past accounting methods are not in question, tho it is conceivable that they may raise ethical rather than economic questions.³ But maintenance of investment is made in terms

¹ Texas Midland Brief, p. 399; see A., B. & A. Brief, p. 550.

² The following quotation from Mr. Brantley's Condition Per Cent, p. 14, seems to grant the whole case, when considered in terms of proper economic definition:

"It may well be that in the case of a large and expensive pump used by a water company, that a reserve fund should be accumulated with which to replace it when its service life, by reason of its inadequacy, is finally ended. It may well be also that long stretches of water mains laid at one time will have their service life expire at one time, and that the cost of replacing them, as in the case of the pump, would be greater than could be paid for as an ordinary operating expense. In such case it would be proper to have a depreciation reserve also, and in both these cases it might well be that on any given date, by reason of a recognized approaching day for a renewal, that neither of these properties could be given its cost new value. In the case of a railroad, however, its parts are being so constantly renewed, that it is found simpler and more practical to charge the cost of such renewals directly to operation. The vital thing in both cases is to continue the service and at the same time to preserve the value of the investment for service giving. If a continuous service is preserved, and can be indefinitely preserved by the railroad through its method of replacements, it follows that there is no loss of worth in its investment by reason of the age of its plant units." The answer to these assertions is simply that they are beside the point.

³ Railroad Valuation, pp. 121, 122, and references there cited.

of dollars, not in terms of operating efficiency.¹ That Mr. Kruttschnitt, "as a maintenance man . . . would understand the statement that . . . (his) track was in 85 per cent condition to mean that there was 15 per cent there of neglected maintenance," simply establishes "railroad usage, custom, and practice."² It is useful for no other purpose, except as evidence of the inadequacy of that usage and practice when an appraisal of accrued depreciation is in process. The difficulty rests in an inability or unwillingness to recognize a differentiation of concept when the selfish interest can refer to an unscientific and loose phrase of professional speech. To show the economic facts is not to confiscate.³ The Commission's conclusion is sound, however uncertain its reasoning.

IV. LAND

The present value of land, as made final by the Commission, is based upon a conscious attempt to apply

¹ It is significant of the difference in point of view, as well as indicative of the ambiguity of the Supreme Court opinions that the following quotation from *Knoxville v. Water Co.*, 212 U. S. 1, should have been cited by Mr. Brantley (who follows the citation with the argument that a condition of continued newness is impossible, and that, therefore, maintenance from earnings must mean replacements, which being made keep the investment unimpaired), and by the Commission. *Texas Midland*, 1 Val. Rep. 1, 49, where the Commission, satisfied to cite authority, including the Railway and Canal Commission of Great Britain, approved and adopted "the definition of depreciation applied by the bureau."

In the *Knoxville* case, the Supreme Court said:

"Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. . . . It is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given terms of years the original investment remains as it was at the beginning."

See also discussion of Mr. Brantley and Commissioner Hall, Hearings, September, 1915, pp. 41-46. Mr. Brantley, quoting Justice Hughes, in the Minnesota Rate cases, "It would seem to be inevitable that in many parts of the plant there should be depreciation, as, for example, in old structures and equipment on hand," sought to establish the rule, as a rule of the Supreme Court, that only accrued depreciation of old structures and equipment which he sought to identify with deferred maintenance, should be deducted. The argument was not duplicated in later discussion. All in all, Commissioner Hall's questions were pertinent and indicated an understanding of the real problem.

² Hearings, May, 1915, p. 73.

³ *Texas Midland*, 1 Val. Rep. 1, 47-52; *Kansas City Southern*, 1 Val. Rep. 223, 258.

dicta expressed by Justice Hughes in the Minnesota Rate cases:

Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed . . . cannot extend beyond the fair average of the normal market value of land in the vicinity having a similar character.¹

Justice Hughes really decided nothing when he used these words, for the conclusion is qualified by an assumption neither approved nor disapproved. This fact Mr. Prouty, and the Commission, following Mr. Prouty, have ignored. Where Mr. Prouty found authority for his assertion that "the decision explicitly holds . . . that either an increase or a decline in the value of land must be taken into account," or for his assertion that "in the opinion of the court the carrier was entitled to the increase in the value of its lands like any other individual," is not indicated in his Memorandum.² If there is one thing that the opinion did not do, it was to reach any decision explicitly about land. It condemned what had been done; but it proposed no substitute program except that qualified by an assumption neither approved, disapproved, nor even discussed.³ In terms of the assumption Justice Hughes set a maximum, which the Division of Valuation has reported

The assertion that the deduction of depreciation is "confiscation" appears frequently in Mr. Brantley's argument. A., B. & A. Brief, pp. 432-434; Hearings, May, 1915, p. 83; September, 1915, pp. 534; January, 1917, p. 168. At the Hearings, 1915, he said:

"Now to write out one half of the total cost of these ties estimated at \$1.00 each, amounting to a billion and a quarter dollars — or, in other words, to deduct the accrued deterioration which exists in the ties, as I have defined it — would be to destroy half a billion dollars of value. . . . What I want to urge is that if you should write it out, it is equivalent to writing out a half billion dollars of capital and dumping it into the Atlantic Ocean, because it is gone. It is gone forever." P. 83.

¹ 230 U. S. 352, 455.

² P. 55; see Texas Midland, 1 Val. Rep. 1, 53.

³ Railroad Valuation, pp. 90-93; see argument of Mr. Max Thelen, Hearings, January, 1916, p. 144; and that of Mr. A. E. Helm, *ibid.*, p. 41.

as present value without analysis of the underlying problem:

Present value . . . is arrived at by ascertaining the number of acres of land owned or used by the carrier for its purposes as a common carrier and multiplying this acreage by a market value of similar and adjoining lands.¹

The figure of present value so determined has been denominated by Mr. Farrell as "*a* present value, measured in *a* particular way" and not as "*the* present value."² No such fine line of distinction was drawn by the Commission. The figures reported as present value in the Tentative Valuations of the Texas Midland, the Winston-Salem Southbound and the Kansas City Southern were, as such, made final.³

The methods used in the federal appraisal have been adapted from the expedients developed in the previous state investigations. Mr. Prouty, who "really organized the system,"⁴ simply took over the sales

¹ Prouty, Memorandum, p. 55.

Compare Mr. Maltbie, reporting for the Valuation Committee, the Nat'l Ass'n Ry. Com'r's, Hearings, May, 1915, p. 131: "Present value . . . should be determined from the value of similar adjacent lands;" likewise, the original draft of the act, Valuation of the Several Classes of Property of Common Carriers, Senate Report 1290, 62d Congress, 3d Session, which called for land values measured by the value of adjacent lands.

See the excerpt from Commissioner Daniels' dissent in the Kansas City Southern case, quoted below, note, p. 85.

² Hearings, March, 1917, p. 706, italics in the original; see discussion, Texas Midland Reply Brief, pp. 71-76.

Mr. Farrell also justified the refusal to allow the original clearing and grubbing on the ground that

" . . . the more clearing done on the adjoining land, the greater the value of the adjoining land, and since the carrier gets the benefit of that improvement in the value placed upon the land included in its right of way, it gets paid in increased value of its right of way for the amount of grubbing it in fact did in the original construction, more than we allow for in reproduction." Hearings, December, 1917, p. 135.

The Commission ruled to the same effect, 1 Val. Rep. 1, 16.

³ Such minor changes as were made in the tentative figures represented changes in details, not in principle. 1 Val. Rep. 1, 52-62, 199, 200, 258. But see Commissioner Daniels' dissent, Kansas City Southern, 1 Val. Rep. 223, 269.

⁴ Hearings, March, 1917, p. 876. Mr. Prouty said: "I really organized the system which we use. I have been in the field. I know how the appraisal is done, and I still think I am right."

method, the sales assessment method, and the opinion method, and provided a coördinating and determining factor—the independent judgment of a civil service appointee (salary \$2400-\$3000 per year).¹

Thus the actual figures assigned as value are opinion figures, just as the unit prices in Cost of Reproduction are opinion figures. The parallel in the problem is very real: just as the engineer must correlate specifications and prices, the land appraiser must correlate the quality of land and the values assigned. This has been done by dividing the railroad line into zones, the length of the zone depending upon the substantial similarity of the railroad right of way and the adjacent and adjoining land, and upon the assumed uniformity of the value of that adjacent and adjoining land. But the actual figure of value reported has been an opinion figure,² altho the fact that more often than not, perhaps, the appraiser has been a stranger in the community (he may even be a city real estate expert suddenly required to appraise farm lands), would seem to enforce great dependence upon the sales, sales assessment, and opinion investigation.³

In the Texas Midland case, the railroad alleged at length the weakness of the Commission's basic data.

¹ The investigation of sales includes the sales of adjoining and adjacent lands, and also sales anywhere in the country; and for the same year the assessed valuation is determined to fix upon the ratio. The opinions of loan agents, dealers, and owners of land, other than the owner of the property adjoining, are sought. The idea is to get representative opinion. See Kansas City Southern, 1 Val. Rep. 223, 250.

² Mr. E. W. Reed, the Commission's Senior Appraiser, described his method of fixing "values" as follows:

"I applied to the railway lands a valuation obtained from the valuation of property privately owned. My estimates were based on the value of abutting, contiguous similar land held in private ownership," quoted, Brief of Glenn Plumb for the Railroad Brotherhoods, p. 7.

The statement was made at the Texas Hearings, for which no printed proceedings were available.

³ The appraisal of the Texas Midland lands was made by Senior Appraiser E. W. Reed of Nebraska; by Senior Appraiser A. O. St. John of Missouri; and by Land Attorney C. F. Newman of Missouri. "Neither was or ever had been a resident of Texas, nor had they any acquaintance, or occasion for acquaintance, with the lands in question before undertaking their appraisal." Texas Midland Brief, p. 910.

Indeed, bad faith, evidenced by the deletion of important parts of the testimony and the unfair use of citations, exaggeration, undue influence, were charged by both sides. The abilities and qualifications of appraisers were questioned. The memory of one Commission witness was declared to be "so poor that he did not remember the existence of the European war," etc. Another was so nearly blind that he could barely read a map, etc.¹ And the basic data were declared inadequate. Many recorded sales are paper transactions; the cheapest lands change hands most frequently; ² forced sales, or sales for the settlement of an estate, may show low values; ³ or the consideration shown may be more than the real consideration in order that the securing of a loan may be facilitated.⁴ Assessments on better lands are on a lower basis than upon cheaper lands; ⁵ non-residents are assessed more than residents.⁶ Apprehension of the tax assessor is such that low opinions of value are given;⁷ averages, rough and ready figures, rough approximations, "office valuations," result from opinions not made upon the ground.⁸ But none of these objections to the data gathered to support the appraiser's judgment is conclusive, since, presumably, the weakness of the figures is taken into account when the value figure is independently derived.

To meet this claim, the Texas Midland attorneys sought to show that, in spite of protests to the contrary, the appraisers had actually used an average of the sales, assessment, and opinion figures. While it was possible to show a close correlation between the unit of value

¹ Texas Midland Reply Brief, pp. 99-109, 128-129, 161-166, 275; C. F. Newman, Land Brief, pp. 16-26, 45, 86, 90-95, etc.

² Texas Midland Brief, pp. 921, 936; Reply Brief, p. 169.

³ Texas Midland Brief, pp. 923, 926, 927. ⁴ Ibid., p. 941.

⁴ Ibid., p. 933.

⁵ Ibid., p. 941.

⁷ Ibid., p. 949; at p. 972 it is stated: "It is a general custom in Texas to avoid taxation."

⁸ Ibid., pp. 955, 967, 997-999.

fixed upon and a straight average of opinions, sales and assessment values, yet so long as the appraisers insisted that their own judgment governed the figure set, no exhibit, however patent the correlation, could suffice to overcome this assertion.¹ It can be said, however, that the following table reproduced from the Land Brief of Mr. C. F. Newman, the Commission's Land Attorney, to show the independent character of the appraisers' work, might as easily be cited to show that the appraisers based their figures sometimes on averages, sometimes on sales, and sometimes upon opinion:

Zone	Opinion	KAUFMAN COUNTY ² (AVERAGE VALUES PER ACRE)						Commission's unit of value	
		Sales		Assessments		Straight average			
		Adjoining	Adjacent	Adjoining	Adjacent				
18	\$30	...	\$20	\$45	\$29 $\frac{1}{2}$	\$31.06	\$30		
19	98	...	...	66	78	80.66	90	
20	40	...	...	...	...	40.00	40	
21	44	\$40	43 $\frac{1}{2}$	33	1	40.12	42 $\frac{1}{2}$		
22	114	110	95	...	102	105.25	105		
23	57	47	80	39	21	48.80	55		
24	73	63	80	63	63	68.40	67 $\frac{1}{2}$		
25	323	414	1,387	...	480	651.00	330		
26	91	...	...	90	60	80.33	90	
27	60	75	65	65	...	66.25	65		
28	68	68	...	55 $\frac{1}{2}$	...	63.73	65	
29	69	56	60	75	66	65.20	65		
30	1,100	1,154	845	730	1,500	1,065.80	1,150		
31	252	...	660	108	312	333.00	300		
32	360	580	810	554	160	492.80	400		
33	1,320	1,154	810	2,150	4,280	1,942.80	1,260		
34	164	...	525	...	450	379.66	200		
35	2,650	4,800	...	4,000	2,060	3,875.00	2,650		
36	9,250	...	3,300	14,000	4,000	7,637.50	9,250		
37	375	...	333	400	260	342.00	360		
38	...	...	...	...	...	...	...
39	68	50	52 $\frac{1}{2}$	63	...	58.37	60		
40	56	34 $\frac{1}{2}$	32	52	...	43.62	50		

¹ See Texas Midland Reply Brief, p. 195 and following, for discussion in detail; also pp. 185, 186, 202.

² Land Brief of C. F. Newman, Texas Midland case, p. 23. At p. 22, Mr. Newman says,

"In some cases the averages do closely approximate the appraiser's units of value and there is no reason why that should not be true where there is a sufficient number of

A more fundamental objection was raised by the assertion that the Commission zones contained dissimilar land.¹ It would certainly be an exceptional county where land values remained the same along seven and a half miles of line. The values of farm and village land are determined upon different principles and zones which contained both included obviously dissimilar lands. Urban values, even in the town of a few thousand, vary within short distances; to bulk all such land in the same zone is to resort to a short cut.² Indeed it would seem that, when the appraisers acknowledged that the unit values assigned to certain zones represented weighted averages, the whole hypothesis was overturned.³

The carrier, in order to eliminate averaging, proposed to zone the line in agricultural country upon the basis of the ownership of the adjoining farms, and in towns to create separate zones "for one or two adjoining city blocks."⁴ The result was greatly to increase the number of zones, and to exhibit a range of values within the

representative opinions, of representative sales and of representative assessments. In those cases, it is entirely proper that an appraiser, in arriving at his units of value should attach great weight to his record data."

But see Texas Midland Reply Brief, pp. 98, 187-201, and Mr. Newman's Reply Brief, p. 26.

¹ Texas Midland Brief, p. 989; Protest, N. O., T. & M., p. 36; E., J. & E., p. 38; Texas Midland, p. 32.

² Zone 47 was $7\frac{1}{2}$ miles in length (Texas Midland Brief, pp. 981, 987, 988); zone 13, 5 miles; zone 15, $1\frac{1}{2}$ miles; zone 41, $5\frac{1}{2}$ miles, etc., ibid., p. 984 and following.

³ Texas Midland Reply Brief, pp. 141, 142. The following is from the testimony of the government appraiser:

Mr. Craven: "In your opinion the same values existed in the property which adjoined that track."

Mr. Reed: "The fact of the matter is, the property in that zone was quite spotted, and in order to zone it with accuracy as to the exact value of the land, it would have been necessary to have cut it up into numerous short zones. In order to save the time, and there was no material difference except at small intervals, we concluded to put it in one zone and to fix the average value for that distance."

Mr. Craven: "How did you get at that average?"

Mr. Reed: "In a general way."

Mr. Craven: "Can't you tell me more specifically than that?"

Mr. Reed: "I cannot now." Texas Midland Brief, p. 992.

⁴ Texas Midland Brief, p. 982; also pp. 867, 868.

zones established by the Commission's appraisers.¹ The "naked" land values were opinion figures fixed by committees of local men who "went upon each parcel and studied the peculiarities of each piece."² The object of this appraisal in terms of the value of individual adjacent farms was, however, to fix upon a "naked" land value, and to secure figures pertaining to imaginary consequential damages.³ The testimony introduced at the general hearing of March, 1917, sought, by expert opinion backed up with detailed exhibits, to prove what, it would seem, no one was disposed to deny—that lands are not acquired by railroads "for the normal market value of the same area of naked land for general, not including railway, purposes of similar lands in the vicinity."⁴ This testimony sought also to establish "the further fact that the present cost of acquisition by condemnation or purchase of such lands is, and can be, determined with a reasonable degree of accuracy";⁴ a thing which Mr. Prouty acknowledged was possible; "within certain limits."⁵ The purpose of this testi-

¹ Texas Midland Brief, pp. 984-992; thus I. C. C. zone 47 ($\frac{7}{4}$ miles) was subdivided by the carriers into 43 zones; and zone 17 into 31 zones, *ibid.*, p. 868.

² *Ibid.*, pp. 852, 864, 867-883, 982. The qualifications of the company appraisers are exhibited at length, *ibid.*, pp. 852-861.

³ The carrier's instructions to its appraisers defined "naked land value" as "value for general purposes, and does not include value for railway purposes, severance or other damages, improvements, or any other elements of value for which a carrier must also pay, nor does it include expense of acquisition." *Ibid.*, p. 865.

⁴ *Ibid.*, pp. 891, 759. See testimony of Mr. Thomas W. Hulme, Real Estate Agent, Pennsylvania Railroad Company, Hearings, March, 1917, pp. 396-409, 443-453; of Mr. Joseph Beale, "for twenty-five years actively engaged in the purchase of right of way for the Pennsylvania" (Texas Midland Brief, p. 763), pp. 454-536; of Mr. F. M. Gilborough, Tax Commissioner, Missouri, Kansas & Texas Railway, *ibid.*, pp. 536-565; of Mr. H. S. Marshall, Land Assistant, Presidents' Conference Committee, Western Group, pp. 582-622, 653; of Mr. W. R. Van Campen, Land Attorney, Eastern Group, pp. 622-646; of Mr. Charles Silliman, Engineer, Southern Group, pp. 646-653; of Mr. Pearce Horn, Superintendent, Real Estate, Southern Railway, pp. 654-658; of Mr. Charles E. Rice, Counsel, A., B. & A. Ry., pp. 658-770; and of Mr. Halford Erickson, formerly of the Wisconsin Commission, and later a practicing expert, pp. 670-702. Mr. Hulme's testimony is quoted in full, Texas Midland Brief, pp. 764-791. Mr. Erickson explained the Wisconsin Commission's use of a multiple, quoted, pp. 840-842.

⁵ Hearings, March, 1917, p. 673; see also Prouty, Memorandum, p. 54. To the Commission, however, it seemed "clear" that "there is a marked difference between

mony was to establish that the hypothetical cost of reacquiring the railroad lands could be determined, preliminary to insisting that the present value of the railroad land be measured by this hypothetical cost of acquisition.

The carrier claim is consistent with the original attitude of the carriers as voiced in their Valuation Brief of 1915: "The present value of each piece of land used for transportation purposes must be determined upon the same principles which govern in condemnation of private property for public use."¹ To uphold this contention, resort is had to voluminous (and not obviously pertinent) quotations from those opinions in which the condemnation-regulation analogy was first assumed.² Without analysis of the real problem, the following conclusion is voiced:

It is clearly settled . . . that the same constitutional provisions which protect private property from seizure for public use without just compensation safeguard it against confiscation by the enforcement of prescribed rates which are arbitrary and too low, and it necessarily follows that, unless the Commission shall make valuation upon a proper application of the same principles which govern in condemnation cases, the purpose of the Act will fail, and the findings of the Commission will not be admissible in evidence even in the classes of cases specified in the Act.³

And what are the principles governing the determination of land value in condemnation cases?

(1) It is the general rule, accepted without question, in condemnation cases, that in determining the value of a strip of land, the

assuming in advance the total cost of acquisition, whether as the result of condemnation and damages paid or of purchase, in excess of the present value of similar lands in the vicinity, when no railroad has been constructed or is in operation, and the attempt to ascertain and state the cost of reproducing or reacquiring, at the present time, lands which actually have been severed from the adjacent property, have been converted into a railroad, and are being occupied by an operating rail carrier." 1 Val. Rep. 1, 54.

¹ Carrier Valuation Brief of 1915, p. 273; Texas Midland Brief, p. 194.

² Reagan v. Farmers' Loan and Trust Co., 154 U. S. 362; Ames v. Union Pacific, 64 Fed. 165; Smyth v. Ames, 169 U. S. 466; San Diego Land and Town Co. v. National City, 174 U. S. 739, etc. (quotations in Carrier Valuation Brief of 1915, pp. 276-297).

³ Carrier Valuation Brief of 1915, p. 297; Hearings, May, 1915, p. 107.

present cost of acquisition of an equally suitable strip or tract of land in or through adjacent similar lands, is relevant to the determination of such value.¹

(2) There is a well-established rule of law, which is uniformly applied in condemnation cases, to the effect that, if a tract of land has a peculiar adaptation for certain uses, this may be shown, and if such special adaptation adds to its value, the owner is entitled to the benefit of it.²

The appraisal submitted by the carrier was made for each county by a committee of three residents, "chosen with primary regard for their qualifications as citizens and judges of land values."³ With "personal knowledge as a basis," the appraisers made a "thoro inspection" of the carrier property, a careful examination of every farm adjoining the railroad being necessary "for the analysis and determination of the extent to which that farm was damaged by the taking and use of the right of way for railroad purposes, and the loss of market value by reason of the existence of the railroad."⁴ Damages classified as those due to severance and those due to the proximity of the carrier were accordingly assessed in detail. The result of this appraisal was to fix a naked land value of the lands classified by the Bureau as "owned and used for transportation purposes" (exclusive of the Delta County lands) amounting to \$240,025.85; and to fix the damages as \$57,906.22.⁵

¹ Hearings, May, 1915, p. 315; Texas Midland Brief, pp. 207, 891, citing (p. 209) Lewis, "Eminent Domain," section 706; p. 1227.

² Carrier Valuation Brief of 1915, p. 314; Texas Midland Brief, p. 101, 206, citing Lewis, section 707; Hearings, May, 1915, pp. 99-101; Notes and Comments, pp. 199-201; Protest, E., J. & E., pp. 13, 37; N. O., T. & M., p. 37.

³ Texas Midland Brief, p. 852.

⁴ Ibid., p. 858. The methods of the carrier appraisers are discussed in detail, C. F. Newman, Land Brief, p. 44 and following; Texas Midland Reply Brief, p. 118 and following.

⁵ Ibid., p. 897. Damage due to severance was defined (*ibid.*, p. 894) as "First, the damage resulting because of the inconvenience due to the separation of its parts, and, second, the loss due to the shape or size of the separated parts." Damages due to proximity of the railroad were there defined as those arising "by reason of the risks and annoyance incident to the operation of a railroad." The carrier appraisal of the Delta and Lamar County lands developed lower figures than those of the Commission. The Delta County figures were never placed in evidence by the carrier. Texas Midland Reply Brief, pp. 86, 301.

But it was the figure of naked land value, and not the figure including hypothetical damages, which furnished the basis for the figures finally claimed by the carrier.¹ The "present value" claimed was calculated by using a multiple or factor of 2.23, and adding to this amount 6 per cent to cover expense of acquisition. The basis of this claim was the general exhibit introduced by Mr. H. S. Marshall, land assistant of the Western Carrier Group at the March, 1917, hearing. Mr. Marshall, using 152 reports from western roads, which showed the cost of acquisition of right of way for 3929.76 miles of line, derived a multiple of 2.62 (the purchase price divided by the naked land value — \$8,941,231.58 divided by \$3,-411,813.75). The expense of acquiring this land was \$577,886.05, or 6.16 per cent of the total price. This study served to demonstrate, at least in a general way, "from the actual experience of these carriers the relationship between the naked land value and the total cost of acquisition."² In order to have particular figures, "careful study was made for the purpose of determining the present cost of acquisition of the railroad lands . . . under the peculiar conditions of soil, topography, and community and rural development."³ This study was made by Mr. E. Holbrook, of the Southern Pacific, who brought to this study "long experience with the problem," and by Mr. William Malone, a Houston real estate dealer, who having acted as real estate agent for the Trinity and Brazos Valley could derive figures which were "the results of a careful study

¹ Except for the amounts claimed for the land occupied by industry tracks, areas in streets, and land alleged to have been omitted. Texas Midland Reply Brief, p. 898.

² Texas Midland Brief, pp. 898, 899. See Hearings, March, 1917, p. 582 and following, and especially the Exhibit at p. 616. It was recognised that, while many of the lines contributing to this exhibit were similar to the Texas Midland, many were dissimilar. A study of the purely Texas lines gave a multiple of 2.05, which was a logical expectation, since the greater part of these lines was located in the plains country of West Texas.

³ Texas Midland Brief, p. 900.

of a practical man, in the light of practical experience in the territory of the Texas Midland." Both gentlemen testified that the cost of acquisition could not be accurately estimated by individual parcels, both falling back on the multiple short cut — that of Mr. Malone (2.23) being adopted "in the interest of conservatism," rather than that of Mr. Holbrook (2.25).¹

This "uncontradicted testimony" was then alleged to establish that naked land value of adjacent and adjoining land is much less than the present value of the lands, rights of way and terminals of the carrier. It is obvious that the "uncontradicted testimony" did nothing of the kind, until it proved in addition that the present value of the lands is measured by the hypothetical cost of acquisition under present conditions. The evidence perhaps did show that naked land value is too low to be used as a measure of "present cost," but it certainly did not "demonstrate that naked land value . . . is too low to be used as a *measure* of the present value or present cost of acquisition of the carrier land."²

¹ Texas Midland Brief, pp. 904, 907. These multiples are the "weighted averages" of county multiples established by the two experts. See also Notes and Comments, p. 205. The actual work done is described by the Commission in the following terms:

"Two men were selected who had no special knowledge of lands along this railroad, who were stationed upon the rear end of a passenger coach, and provided with a map showing the parcels as they were originally acquired. The train proceeded at its ordinary rate over the length of the line. From this inspection these gentlemen undertook to state parcel by parcel the excess cost of acquisition and the damages. A computation showed that less than one minute could have been devoted by them to the inspection and determination of these excess costs and damages as to each parcel. The proposition that the Commission could make a report under any such method as this is too fantastic for serious discussion." 1 Val. Rep. 1, 169.

The method is described in greater detail by Mr. Elmquist of the Minnesota Commission, Hearing, December, 1918, p. 96.

On the other hand, the carriers "seriously urged that no man can appraise property in substantial country by riding through them in a day coach and by consulting the census of 1910, and the soil survey of the Department of Agriculture." Texas Midland Reply Brief, p. 92. It is probable that the demonstration of the extent of the actual examination by the government appraisers (for example, it was shown that the examination had in part been done from a regular passenger train and that at small towns the train had not been stopped, on the theory that the land values would be the same, *ibid.*, pp. 268, 304) led to the stricter instructions described in the Texas Midland opinion, pp. 167, 168.

² Texas Midland Brief, pp. 908, 909; also Hearings, May, 1915, pp. 112, 113.

To this discussion can now be brought words expressed by Justice Hughes in terms of a general principle:

The railroad has long been established; to it have been linked the activities of agriculture, industry and trade. Communities have long been dependent upon its service, and their growth and development have been conditioned upon the facilities it has provided. The uses of property in the communities which it serves are to a large degree determined by it. The values of property along its line largely depend upon its existence. It is an integral part of the communal life. The assumption of its non-existence, and at the same time that the values that rest upon it remain unchanged is impossible and cannot be entertained. . . .

The Company would certainly have no ground of complaint if it were allowed a value for these lands equal to the fair average market value of similar land in the vicinity, without additions by the use of multipliers, or otherwise, to cover hypothetical outlays.¹

The comment of the Texas Midland attorneys upon these words is, in substance, that other language in the opinion upholds, if properly interpreted, the contention that figures produced by their method constitute admissible evidence of land value, since they conform with condemnation procedure, and secondly that the method condemned by the Supreme Court was a different method from that used by the Texas Midland appraisers.²

The second contention can be briefly disposed of, since it represents no appeal to principle. It asserts that, since the base figures to which the Minnesota multiple was applied was not the "naked land value," but included a "speculative increment" and imaginary costs incurred to overcome imaginary difficulties, the objection voiced by Justice Hughes cannot be applied to an appraisal based upon "naked land value."³ But Justice Hughes' language was in general terms: "The

¹ Minnesota Rate cases, 230 U. S. 352, 452, 455. See the discussion, in detail, Railroad Valuation, pp. 85-93, 153-159, where the inadequacy of the "fair average market value" test is demonstrated.

² Texas Midland Brief, p. 218.

³ Ibid., pp. 218-227.

conditions of ownership of the property and the amounts which would have to be paid in acquiring the right of way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination.”¹ And the fact remains too, that it is equally difficult to see how even the measure proposed by Justice Hughes as a maximum — “assuming that the railroad is entitled . . . to attribute to its property an increase in value, . . . the fair average of the normal market value of land in the vicinity having a similar character” — eliminates “conjecture.”² Looking at the problem in terms of general reasoning (and not in terms of legal strategy) it seems clear that the appraisal introduced by the Texas Midland is, in its essential premises, identical with that condemned on logical grounds by Justice Hughes.³

Better authority can be secured from the Minnesota opinion for the first contention of the carrier attorneys: that portions of the opinion by “manifest implication” and “necessary implication” indicate that the rule for the ascertainment of compensation in condemnation cases would have been approved.⁴ Elsewhere the difficulty of harmonizing Justice Hughes’ conclusion in this portion of his opinion with the cases which he cites and explains in his argument has been indicated.⁵ The attorneys for the Texas Midland attempt to establish such harmony:

The phrase “the fair average of the normal market value of the land in the vicinity having a similar character,” and the phrase “the fair average market value of similar land” mean the same thing, to

¹ 230 U. S. 352, 452.

² See Railroad Valuation, pp. 90-93 for a critical analysis of this portion of Justice Hughes’ opinion.

³ See Texas Midland, 1 Val. Rep. 1, 60.

⁴ Texas Midland Brief, pp. 223 and 228. The same reasoning and phraseology is found in Mr. Butler’s argument, Hearings, May, 1915, pp. 108-115.

⁵ Railroad Valuation, p. 155.

wit: the amount which the owners would be entitled to receive therefor, in case of acquisition by condemnation of a right of way out of such similar lands.¹

The difficulty arises from the fact that Justice Hughes, having disposed of the carrier contention on one basis, went back to demonstrate that, even upon the hypothesis proposed by the carrier, the figures presented were not acceptable. Making the supposition which he had so vigorously condemned — that the railroad had been obliterated, and that its lands were in the hands of others — he stated the rule that the owner would be entitled to receive, through condemnation proceedings, “its fair market value for all its available uses and purposes,” an “element to be considered” being “any peculiar or special adaptation for railroad purposes.”² Yet “the owner would not be entitled to demand payment of the amount which the property might be deemed worth to the company, or of an enhanced value by virtue of the purpose for which it was taken; or of an increase over its fair market value, by reason of any added value supposed to result from its combination with tracts acquired from others so as to make it a part of a continuous railroad right of way held in one ownership.”³ But the carrier attorneys, resort-

¹ Brief, pp. 223, 244. At p. 226 it had been asserted: “It is clear that the phrase ‘its fair market value’ . . . and ‘the fair average’ . . . mean the price which the company would legally be required to pay in condemnation proceedings.” Surely this is to assume and not to prove a conclusion. At p. 228 less certain language is used: “The present cost of acquisition — ascertained according to the principles which govern in condemnation of private property for public use — of such right of way, or of an equivalent right of way, is certainly a relevant fact, and good evidence of present value.”

See also the extended discussion by Mr. Brantley, Hearings, January, 1917, pp. 240-248. Mr. Brantley’s argument is substantially the same as that here outlined from the Texas Midland Brief.

² Minnesota Rate cases, 230 U. S. 352, 451, citing U. S. v. Chandler-Dunbar Water Power Co., 229 U. S. 53; Mississippi, etc. Boom Co. v. Patterson, 98 U. S. 403; Shoemaker v. U. S., 147 U. S. 282; Boston Chamber of Commerce v. Boston, 217 U. S. 189.

Mr. Butler, Hearings, May, 1915, p. 111, makes the point that the Hughes opinion is “not written in the best of order.”

³ 230 U. S. 352, 451; see Hearings, May, 1915, p. 100 (Mr. Butler).

Justice Hughes, commenting upon the evidence presented, in relation to the basis for determination of land value for condemnation said: “There is no evidence before us

ing again to "implication" and "knowledge," next assert:

Fair market value for all its available uses and purposes, arrived at by giving due consideration to peculiar value and special adaptation for *railroad purposes*, is known by all to be greater than the market value of similar adjacent lands for agricultural and other like purposes. Therefore, the language of the court . . . "the fair average of the normal market value of land in the vicinity having a similar character," means what the railroad company would now have to pay in condemnation proceedings, under the rule stated in this opinion, to acquire the right of way land if it were held by others.¹

The basis for this conclusion (which seems an obvious *non sequitur*) is the "well recognized fact" that the acreage value of the similar lands through which a right of way extends, is "as a rule," less than the acreage value of the right of way.² This is to assume the conclusion, not to prove it.

The Commission approaches a recognition of the claim set forth in these terms by the assertion that "due allowance" is accorded "any special value which may attach by reason of the peculiar adaptability of the land to railroad use."³ But since, presumably, the figures reported and approved were based solely upon the value

from which the amount which would be properly allowable in such condemnation proceedings can be ascertained." P. 452. Mr. Brantley used this comment to justify the assertion that the Court approved cost of condemnation as value. Hearings, January, 1917, p. 244.

¹ Texas Midland Brief, p. 229; Hearings, May, 1915, pp. 112, 114. Yet it is asserted, Texas Midland Brief, p. 231: "In value of its whole right of way, the carrier is entitled to have included all elements of value existing at the time of appraisal, including value due to shape, continuity, and profitable use. Therefore, present cost of acquisition, arrived at upon the principles which are applied in condemnation, may be, and frequently will be, less than present value."

² Ibid., p. 232. It had previously been stated that "Value, at date of acquisition, may be greater than cost, because of a combination of many tracts to make a continuous right of way held in one ownership." Ibid. But see also Hearings, May, 1915, p. 113, to the effect that what it costs to buy at time of purchase constitutes "value."

³ Texas Midland, 1 Val. Rep. 1, 3, 53, 167. This holding is from Prouty, Memorandum, p. 49.

of adjacent tracts, this "due allowance" is more nominal than real.¹

Quite aside from the question of the premises, stated or assumed, the carrier reasoning, which is based solely upon appeal to authority, presents an entire failure (or unwillingness) to recognize that at no place does Justice Hughes state an affirmative rule. His proposed adjacent land test is premised upon an assumption which he neither rejected nor affirmed, while his discussion in terms of condemnation precedents is specifically conditioned by a premise which elsewhere is vigorously rejected. The truth would seem to be that Justice Hughes (following the example of Justice Harlan in *Smyth v. Ames*) discussed phases of the problem, and decided nothing except in terms of disapproval.² An analysis in terms of economic principles must have resulted in the rejection of the condemnation analogy. But the facts did not demand such analysis.

There is an essential difference between the results obtained by the proposed carrier test and those obtained by the Commission's method. Using the value of adjacent tracts and a multiple, it will be exceptional indeed when the "value" claimed will not exceed the amount originally paid by the railroad. And this probability

¹ Now, moreover, the discussion of the "railway value" of land, Railroad Valuation, pp. 186, 187; also Texas Midland, 1 Val. Rep. 1, 57-59. That "railway value" is not a clean cut concept is readily apparent: It has been defined in terms of a "value" which is based upon a multiple, and in terms of adaptation for railroad purposes. It is in the latter sense that the phrase is used in Railroad Valuation; in the former sense (and to the writer's mind, a less satisfactory sense) by the Commission in the Texas Midland opinion (p. 57). The phrase is used in both meanings in the Minnesota Rate cases, 230 U. S. 302, 451-466.

² Railroad Valuation, p. 17.

In the Winston-Salem Southbound case where the tentative valuation based "the present value of lands upon the normal fair value of similar lands in the vicinity, ascertained in the manner employed and stated in the Texas Midland case," the Bureau and the carrier agreed on the present value, and the carrier's protest was waived, tho this waiver did not extend to the claims as to the ascertainment of reproduction cost or present cost of acquisition.

increases with the passage of years. Even with the Commission's method only the most recent projects may normally be expected to show a "present value" below actual cost. The increase in the value of both urban and rural lands has been such that only where a carrier has been forced to buy into an already valuable area, and to pay a price based, amongst other things, upon the presence or proximity of another railroad, has the cost exceeded what the Commission reports as "present value." But for these recent projects, and for some portions of even the older projects, it can be shown that the amounts reported as "present value" are actually less than was paid by the carrier. The notable illustrations occur where terminals have been bought in cities, as when the A., B. & A. secured the lands needed in Birmingham and Atlanta;¹ but even the Texas Midland could show areas which had cost more than the Commission's "present value."² To meet this situation Mr. Prouty proposed another concept: "reasonable value," original cost being "stated as present value, not because original cost is present value, but because under the circumstances it would be the best evidence of such reasonable value"—provided "the value of these lands had not declined since the date of their acquisition, . . . they were acquired with reasonable prudence, and . . . no unusual or abnormal condition appeared."³ The Commission did not follow this

¹ Thus the Birmingham terminals, costing the road \$1,300,000 were "valued" at \$900,000. A., B. & A. Brief, pp. 589, 730; Hearings, March, 1917, p. 668. "Specific examples" to show instances where cost exceeded "present value" are cited in the A., B. & A. Protest, p. 47; cost of \$39,992, present value of \$3,843; \$40,658, \$20,775; \$13,350, \$3,936. See also Kansas City Southern Protest, p. 46.

² Texas Midland Brief, p. 881, a table showing "numerous instances, where, despite the great increase in land values during recent years, the 'present value' . . . is less than the carrier paid." P. 879.

³ Prouty, Memorandum, p. 55. See Hearings, December, 1917, p. 164. Mr. Prouty's reference is here doubtless to the Minnesota Rate cases:

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident,

recommendation of Mr. Prouty, which is, after all, an attempt to introduce equitable considerations in the private interest.¹ Perhaps it was enough that, in the face of the instances cited by the carrier, a present value of \$254,479.98 was reported for lands which had cost \$67,493.44, of which only \$22,884.69 had actually been contributed by the carrier, lands valued at \$44,608.75 having been donated.² Taking the railroad site as a whole, the method of measurement adopted showed an increase in the value of lands which exceeded any extra costs at the time of original acquisition.

But is not cost, rather than "value" based upon hypothesis, the really important figure? The railroad is a highly specialized case of "capital sunk in the soil." Only a small part of the railroad plant can be devoted to another use, or to the same use in another place. The

losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property and not the original cost of it, of which the owner may not be deprived, without due process of law." 230 U. S. 352, 454. See discussion, *Railroad Valuation*, p. 124 and following, and especially pp. 128, 139.

¹ The same difficulty caused Commissioner Daniels to write as follows in his Kansas City Southern dissent:

"Evidence before us shows clearly that where a railway is first projected through a new region, the land is often acquired at a nominal cost, whereas when a carrier is well established and a region is fairly populous, the costs to the carrier of the later-acquired lands whether through purchase or condemnation are likely to exceed the normal value of lands adjacent.

"I raise these queries as to the method employed to ascertain land values in order to indicate my fear that a rigid formula may be applied where a more rational method would modify the formula where justifying circumstances exist. A chance dictum may easily harden into a formula, and a formula into a fetish, if the matter is not lifted into a plane of rational procedure. It was in the Minnesota Rate cases that it is said, p. 355: 'There is no formula for the ascertainment of the fair value of property used for the convenience of the public, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts.'

"In what is said above in criticism of what appears to me an unduly inflexible method of estimating land values, I am not to be understood as challenging the propriety of the Commission's specific land estimates in the present case and still less as subscribing to the exaggerated figures sought by the carrier for its Kansas City lands. But I am anxious to reserve scope for 'a reasonable judgment having its basis in a proper consideration of all relevant facts.'" 1 Val. Rep. 223, 269.

² Texas Midland, 1 Val. Rep. 1, 77.

railroad site is withdrawn from actual or potential agricultural, residence or business use. A considerable fixed investment has been made once for all in grading a suitable roadbed, and providing the necessary permanent structures. Once this investment has been made, the roadbed and site are substantially identified; and whether the investment in the long run shall prove warranted depends, not on the cost of producing the structure, but upon demand: the volume of traffic and the level of rates maintained. The return is a "quasi-rent."¹ Once the net earnings extend beyond the point which furnished the inducement to the original investors an element of "unearned increment" appears in earnings, comparable to the "unearned increment" accruing in the rent of sites devoted to other than railroad purposes.² But this "unearned increment" can only be measured in terms of cost.³

The difficulty with most of the reasoning upon this subject is that an increase in the value of land is assumed to be "natural;" the relationship between the unearned increment in the rent of lands, and the unearned increment in land value which is the result and not a cause of the unearned increment in earnings, is not understood. Since the valuation test is a test proposed to measure earnings, attempt has been made to secure a basis independent of earnings. So, assuming that the railroad is entitled to the unearned increment — which

¹ See Marshall, *Principles of Economics*, pp. 74, 412, 425, 426.

² See the discussion in *Railroad Valuation*, pp. 201-205; also A., B. & A. Brief, p. 468. At a meeting of the Railway Real Estate Association, Mr. James P. Nelson, of the Chesapeake & Ohio summarized the position held by railroad land in the following terms:

"Our right of way is not for sale as land at any price unless we abandon the use of the right of way and then at once it may become utterly valueless. We have destroyed its value for every other purpose, except as railroad purpose, that purpose gone, the value has gone. . . . If we cease to use the land as right of way, then, unless it has fitness for some other purpose, it has lost the breath of life." *Railway Age Gazette*, vol. 61, p. 702.

³ *Railroad Valuation*, pp. 124-131.

is really the underlying problem¹ — it has been proposed to measure the value of the railroad site in terms of the value of lands devoted to dissimilar use, and in truth a value dependent upon the presence of the railroad. There is no essential difference (except in degree) between the Commission's "adjacent land" test, and the carrier's "adjacent land and multiple" test in this respect. Both are unsound.²

V. Cost

The Valuation Act calls for the ascertainment and report in detail of the "original cost to date" of each piece of property. This requirement the Commission has interpreted as demanding the report of a *fact* as contrasted with an *estimate*.³ The properties have been "actually produced in the past, and their production has cost a given amount of money." Provided the records suffice, original cost, "a fact of prime importance," can be exactly known, and it is in the *exact* sense that the words are interpreted by the Commission.⁴

¹ Railroad Valuation, pp. 204, 205.

Mr. LaFollette said in the Senate:

"The primary purpose in establishing the values separately I shall state very frankly. It is to put into the possession of the Commission and upon record the data which will enable us ultimately to try out the question and determine the right of the railroads to capitalise the unearned increment." 49 Congressional Record, 3800.

² Railroad Valuation, pp. 90-93, 124-131; see discussion by Mr. Butler, Hearings, May, 1915, p. 107; by Mr. Hulme, p. 122; also Hearings, March, 1917, p. 566, where the presence of a congested colored district is supposed to add "value" to the yards of the Kansas City Southern at Port Arthur.

³ "The cost of reproduction new is of necessity an estimate, for the property never will be reproduced in fact and the exact expense of reproducing it cannot, therefore, be known. Depreciation is necessarily an estimate, for there is no way in which the exact amount of deterioration can be known." Texas Midland, 1 Val. Rep. 1, 176.

⁴ Ibid. Mr. Prouty has said:

"Possibly I ought to say a word on the subject of original cost. The States say that there is no disposition upon the part of the Bureau of Valuation to show the original cost. I desire to state, at the outset, that that impression is absolutely erroneous. The

Search has been made for the best evidence of cost. The usual sources of information are the books and files of the carrier, but where these records are "missing or deficient with respect to the expenditures for property" resort is had to the records of the contractors, of reorganization committees and syndicates, and of courts and commissions. Where cost cannot be determined "within reasonable limits of accuracy, from evidence which carries with it a fair degree of certitude" (i. e., "exactly") the Commission reports, not a figure of estimate, but a statement of the impossibility of making a report of cost.¹

The detail of the report is entirely governed by the character of the records, altho, in its interpretation of the language of the act, the Commission has held that the phrase "each piece of property" is to be given "a reasonable and sensible construction." While the primary account has accordingly been selected as the basis for the report (as "ordinarily . . . sufficient for every practical purpose") it has, in some instances, been possible to distribute the costs to the structural units. The information is generally given by valuation sections, but if the costs can be given only for the line as a whole, the latter procedure is followed; and, where only fragmentary data are available, such as land and equipment costs, reports covering such portions of the plant are made.²

The inadequacy of railroad records makes difficult distribution even by primary accounts. Until 1907 accounts were not uniformly kept by different railroads,

Bureau of Valuation, speaking for Mr. Staples, Mr. Farrell, and myself, attach more importance to original cost when original cost can be known than we do to any other thing which can be known in this valuation. But, gentlemen, we want to know that it is original cost. Now original cost is a fact; it is not a guess." Hearings, December, 1917, p. 142.

¹ Texas Midland, 1 Val. Rep. 1, 177.

² Ibid., pp. 178, 179; Kansas City Southern, 1 Val. Rep. 223, 229-238.

nor even by the same railroad over a period of years. Additions and retirements, changes and betterments, have been made without affecting the property accounts. During adverse years maintenance has been deferred; during prosperous years improvements have been charged to operating expense. Even for equipment it is only "where the additions and changes have not been extensive" that "original cost as a rule can be shown with exactness." And the showing of original cost for the road accounts is "extremely difficult" because in the face of continual changes involving additions and retirements, the same general structure has been maintained.¹ When the Commission's accountants sought, by examining every voucher of the Texas Midland, to reconstruct the accounts "upon a proper basis," the task was found impossible of precise accomplishment. Accordingly, the tentative valuation reported that while "it was possible to identify the equipment now in existence and show the cost of that, and also to show the original cost of lands with reasonable certainty, . . . a statement of the original cost of particular structures, or by primary accounts, or even of the property as a whole, would be entirely misleading."² Such report has been possible for the Winston-Salem Southbound, which was built as a complete new project after 1907.³

Even for the Winston-Salem Southbound it is not asserted that the amounts reported "in every instance represent the exact cost of property units now in place."

¹ Texas Midland, 1 Val. Rep. 1, 179; see the discussion, Railroad Valuation, pp. 114, 115, 121, 171-173, and the references there cited; also Texas Midland Brief, pp. 306-315, and cases cited.

² Tentative Valuation, Texas Midland, p. 11.

The accountants, however, were not able to assign the greater part of the improvements "which must have been made to this equipment, a large part of which was purchased prior to 1898." Ibid., p. 12.

See also Railroad Valuation, pp. 136-140, and especially the quotations there given from Mr. Prouty's address before the 1914 meeting of the Nat'l Ass'n Ry. Com'rs.

³ Tentative Valuation, pp. 8, 13.

But, with the qualification that "doubtless some renewals have been made," the tentative valuation states that the original cost has been distributed to primary accounts, and has been allocated to localities or units.¹ The qualification is, however, significant, and especially significant for the older properties. The rules of the Commission with respect to certain accounts are based upon the concept of maintenance in terms of operating efficiency, and not of maintenance in terms of dollars of investment. Accordingly no account is taken of any difference between the cost of the new unit, and the original cost of the unit retired; an important consideration in a period of advancing prices; and especially important for those units of plant subject to frequent replacement:

Consider the tie as an illustration. Let it be assumed that the tie now in place is exactly similar in every respect to the tie which was originally installed 25 years ago. That tie cost 50 cents; the present tie cost \$1.00; nevertheless, the original cost of the present tie as carried upon the books of the carrier and in its investment account is 50 cents, which is reported as the original cost. The cost of placing the tie is carried in Account 12, tracklaying and surfacing, which is entirely a labor account. Evidently, if the cost of labor has increased, the expense of placing the present tie exceeds the expense of placing the original tie, but this difference in expense is not reflected in Account 12, and it does not therefore appear in our report of original cost. Other of the primary accounts are affected in the same way to a greater or less extent.²

The question thus resolves itself into the question of whether we are now interested in what the existing plant

¹ Tentative Valuation, p. 13.

² Texas Midland, 1 Val. Rep. 1, 178. This paragraph would seem to be a reflection of the discussion, Hearings, March, 1917, p. 380. At p. 149 it is stated:

"The accounting rules of the Commission do not permit a carrier to include in the cost of a betterment or addition to its property anything on account of engineering service rendered by the operating engineers of the carrier. It usually happens that railroad systems of considerable size employ engineers of ability as a part of their regular operating force, and these engineers exercise a certain amount of supervision over additions and betterments to the property. To an extent, therefore, engineering is not included in the cost of these subsequent improvements and does not appear in the total of Account No. 1." See discussion by Mr. Brantley, Hearings, May, 1915, pp. 73-76.

cost, or what the original plant cost five, ten, fifty years ago. Which constitutes original cost to date, which constitutes investment?

Fundamental considerations are raised in these terms. The Commission's accountants, finding it impossible to allocate costs to units of plants, have shown a "kind of original cost" by seeking to determine the source of the funds spent for plant, when units of plant have been added otherwise than as replacements charged to operating expenses. "When the proper retirements have been made the result is the original cost of the property in existence, assuming those retirements to have been all identified and the original cost properly determined."¹ The difference between any amounts charged to operating expense because of a more expensive replacement in kind (a \$1.00 tie instead of a 50 cent one) and the original cost of the original unit (the 50 cent tie) is assumed not to constitute investment, since it has been charged to operating expenses.²

In substance this is a proposal to accept the carrier accounts for operating expenses at the same time that

¹ Texas Midland, 1 Val. Rep. 1, 179. The amount reported as the "maximum cost" of the Texas Midland, determined upon this basis, was \$2,892,360.94. Ibid., pp. 9-11, 98-100. "It is believed that this figure is of great value, but it must not be understood that it precisely represents original cost, for it does not," p. 190. See also Hearings, May, 1915, p. 142; December, 1917, p. 169. For the Kansas City Southern it was agreed between the Bureau and the carrier that the total "investment cost" of the railroad system, excluding an affiliated tank car line, was \$46,978,042. 1 Val. Rep. 223, 229.

² The following is quoted from the Brief of Messrs. Benton and Farrell supporting the Kansas City Southern tentative valuation:

"Such increase in the cost of ties used for renewal as has been paid out of operating expense, and the same cannot be included in a statement of original cost without making such cost, as reported, reflect something quite different from the investment in properties made by the owners out of capital advanced by them. It is not to be supposed that Congress intended that the Commission should include as original cost to the carrier anything which has been properly paid for as operating expense," p. 26. It had previously been admitted that an increase in the cost of ties had occurred, and that the increase had not found its way into the investment account of the carrier. But it was denied that this cost should be included in original cost. Ibid.

See Kansas City Southern, 1 Val. Rep. 223, 237, 238.

the property accounts are rejected as worthless, altho the inadequacy of accounting theory and practice would seem to apply equally to both. Because it could not be determined from the accounts whether "Box Car No. 1894 (galvanized sides and roof) . . . had been built at the company's shops and the cost thereof charged to operating expenses, or whether it had been donated," no original cost for this unit of plant was reported.¹ This is perhaps an extreme illustration, but it serves to bring out clearly the essential point of principle: it is possible for actual investment to be made even tho the cost of the unit of plant be charged to operating expenses. Whether the new unit of plant represents a net increase in investment depends upon other considerations: maintenance, depreciation, etc.² But when analyzed in terms of investment (money spent in the creation of plant) all maintenance is seen as a creation of capital goods, altho the accountant conceives of it only as expense.³ It is not a *reductio ad absurdum* of the depreciation appraisal that the "condition per cent" of a locomotive is greater after shopping than before. The newly shopped locomotive represents more stored up labor, measured by dollars of labor cost — greater investment.⁴

¹ Texas Midland, 1 Val. Rep. 1, 100. It was further stated that no record of the cost of the car could be found in the accounts.

² See the discussion, Railroad Valuation, pp. 108-124 and especially pp. 110-114, 121.

³ "Take the case of the locomotive. When it has been shopped, the cost of the new wheel, or piston rod, or driving axle constitutes the existing investment, not the cost of the original part which has become worn out and useless for productive purposes. . . . The accountant would conceive of the cost of such repairs as maintenance, therefore, solely as operating expenses. Business practice does not coincide with the refinement of economic theory which is important for the course of the present reasoning." *Ibid.*, p. 111. And see the diagrams in F. A. Delano, "The Application of a Depreciation Charge in Railway Accounting," *Journal of Political Economy*, vol. xvi, p. 362, which illustrate the contention here made; and testimony of Mr. Wells of the Texas Midland in response to the question as to what was left of an original engine: "There was not very much of the original locomotive left except the outside shell of the boiler, the frame and the cylinders." Hearings, March, 1917, p. 864.

⁴ Condition Per Cent, pp. 34, 40.

Within uncertain limits, set by a variable standard as to what constitutes the most economical operating condition (or from the other angle, what constitutes "deferred maintenance") the carrier has very real control over the disposition of its income. The public has not paid the operating expenses of the railroad in any different sense than it has paid the operating expenses of any other private business. The public has paid a price for a service, and out of the total income, the disposition of which has been largely in the hands of the directors, appropriations have been made for dividends, for maintenance, for extensions, etc. Once the income accrued to the private company, its distribution, except as affected by safety regulations, etc., has been determined by the private interest, and under private control. Heavy appropriations for maintenance, replacements and renewals (even for additional structures) have been made out of earnings, but the directors have had the choice of making such reinvestment of earnings, or of distributing the earnings, including even the amounts properly representing the wearing out of equipment and plant.¹ When dividends have been suspended, or interest repudiated, in order to put money back into the property, can it be said that the plant bought from earnings did not cost the owners anything, because charged as operating expense upon the books?²

Any legitimate claim for "appreciation" is based upon an analysis of maintenance as investment, altho the concept, as discussed by the carrier counsel, is by no means clean cut.³ Too frequently the evidence (expert

¹ For illustrations of what happens when the directors fail to invest earnings in plant, see the discussion of the Boston & Maine and the Rock Island Co., in Ripley, "Railroads, Finance, and Organisation," pp. 236, 237; and the chapters on the Atchison and the Baltimore & Ohio, in Daggett, "Railroad Reorganisation."

² See quotation from Mr. Prouty, below, p. 268.

³ Railroad Valuation, pp. 110, 111; Texas Midland, 1 Val. Rep. 1, 65-68; 130-135.

testimony) has sought to show that the old roadbed is more "valuable" than the new roadbed, because maintenance expenses are less, or a purchaser would be willing to pay more, etc.¹ But the essential point is that "a railroad is not a finished product when the construction forces have put its parts together and turned it over to the operating department."² There is still much work to be done "in resurfacing, in opening up clogged waterways, and in bringing about an improved condition or roadbed, right of way and station grounds."³ And to the extent that this work represents a net addition to investment it may be said that an "appreciation" has occurred which is quite independent of earnings or "value," regardless of the method of handling the extraordinary expenses upon the books. When the Commission falls back on its accounting categories, the real underlying problem is passed over. That under the prescribed rules of accounting the carrier cannot carry any part of this expense into its investment ac-

¹ The following excerpts from the testimony are typical:

Mr. Brantley: "Mr. Brumley, as between a new roadbed; that is, one that is first completed, and an old roadbed, or one that has been in operation quite a number of years, which is the more valuable?"

Mr. Brumley: "The old roadbed, which has gone through the process of seasoning, solidification, and adaptation." Hearings, March, 1917, p. 149; compare testimony of Mr. C. S. Churchill, of the Norfolk & Western, p. 164; testimony of Mr. H. C. Phillips, Hearings, May, 1915, pp. 59-61.

² Mr. Brantley (*ibid.*, p. 56) continued in terms which indicate the uncertainty of the concept:

"In addition to such further work and quantities there is an increased value that comes to the property by reason of solidification, adaptation, and adjustment which is due primarily to time and use. This additional value is quite pronounced and is universally recognized to exist, and is the appreciation for which, as I understand it, we are now asking an allowance be made."

³ Carrier Valuation Brief of 1915, p. 157.

In the Kansas City Southern Brief, it is said:

"It appears from the testimony of Mr. Johnson, Mr. McCarty and Mr. Rust, that section men ordinarily perform work properly classed as construction work, such as widening cuts and fills, sodding banks, cleaning out ditches, and depositing the material in embankments, constructing rip rap and other bank protection work. Approximately 8 to 10 per cent of their time is employed in work of this character. This work is essentially construction work, and its cost is a proper capital charge." P. 269. The Texas Midland Brief does not discuss appreciation because the "principles and authorities" are fully discussed in the 1915 Brief.

count proves nothing conclusively, except that, when tested by a refinement of economic theory, the accounting rules are inadequate.¹ Thus there is no "transmutation of past operating expenses into property."² The property (plant) already exists as part of the machinery of production. Nor from the point of view of principle is it important that an extremely difficult task of measurement is proposed.³ It is perhaps significant that the Commission in the Winston-Salem Southbound opinion falls back on the cost of reproduction hypothesis: "Appreciation cannot be produced merely by the expenditure of money and therefore cannot be reproduced new. We have already pointed out that the valuation amendment contemplates the ascertainment of cost of reproduction new, and not the cost of reproduction in the present condition."⁴ The cost of appreciation has not been recognized as possibly constituting a part of the real original cost. And this is the fundamental error in the Commission reasoning.⁵

¹ This conclusion is based upon a premise which the resort to the authority of the accounting rules indicates that the Commission admits is valid: namely that actual "betterments" are added to existing plant units through maintenance work. See Notes and Comments, p. 67.

The following is quoted from the March, 1917, Hearings:

Director Prouty: "I do not think we make any question — I certainly do not — that a seasoned roadbed is worth more than a green roadbed. . . . My claim is . . . the seasoning does not cost anything, because it has all been paid for as operating expenses, additions and betterments." P. 165. This conforms with Mr. Maltbie's statement, Hearings, May, 1915, p. 64; see also Mr. Farrell's Brief in the Texas Midland case, p. 35; and in the Kansas City Southern case, p. 14; also Prouty, Memorandum on Final Value, p. 5, to the same effect.

² Mr. Aitchison, Brief for the Nat'l Ass'n Ry. Com'rs, p. 94.

³ See discussion, Texas Midland, 1 Val. Rep. 1, 65, 130, the unsatisfactory nature of which indicates the difficulty of the task of measurement; and Hearings, March, 1917, pp. 80, 102, 127, and 164.

⁴ 1 Val. Rep. 187, 195; Mr. Prouty expressed the same idea at the March, 1917, Hearings, p. 51, and the argument appears in Benton and Farrell, Kansas City Southern Brief, p. 16.

⁵ But the following from the majority opinion in the Kansas City Southern case indicates a less positive attitude than that shown in the Texas Midland and Winston-Salem Southbound opinions:

"It is testified that between 8 and 10 per cent of the time of section men is devoted to work the cost of which represents a proper charge to the capital account. Illustra-

The original cost appraisal made by the Kansas City Southern represents an engineering attempt to supply the data which rewriting of the accounts has failed to secure, because of the inadequacy of the records, or the insufficiency of the accounting rules. The proposal, by no means a new one, is that an engineering investigation, parallel in its scope with the reproduction field work, shall be translated into terms of dollars on the basis of the actual cost of the units in place, regardless of the source of the funds.¹ The result secured by such investigation (assuming 100 per cent accuracy) will be that sum which measures the investment new (represented by the physical plant) in terms of dollars. In a very real sense it measures original cost to date; in fact, it is difficult to see that any other figure can represent such cost, except on the basis of far-fetched definition.² But the Commission, in its Kansas City Southern opinion ruled otherwise.³

The contention of the carrier has not been answered in terms of principle. "The Commission has taken the position that if the facts as to original cost cannot be ascertained from the records, an estimate may not be substituted." ⁴ Cost, it will be remembered, is a

tions of such work are widening cuts and fills, sodding banks, cleaning out ditches and depositing material in embankments. . . . We will not add unknown charges to the amount stated as investment in the property and the claim of the carrier is not sustained." 1 Val. Rep. 223, 252. This establishes a test of accuracy, not a test of principle.

And compare Commissioner Daniels' critical analysis of the unsatisfactory treatment of the appreciation problem in the three cases in his dissenting opinion. *Ibid.*, pp. 266-269. He says: "The fact that the carriers have not shown us how to measure it is no excuse for our declining to measure or estimate it, if it exists, and it ought to be included and reported." P. 269.

¹ Testimony of Mr. R. J. McCarty, Vice President, Kansas City Southern Railway, Hearings, March, 1917, pp. 357-395; Protest, Kansas City Southern, p. 11; Brief, pp. 243-279. See Brief of Glenn Plumb for the Railway Brotherhoods, pp. 67-73.

² Railroad Valuation, pp. 110, 135, 136. See Mr. Prouty's discussion, Hearings, December, 1917, pp. 142-144.

³ Kansas City Southern, 1 Val. Rep. 223, 229.

⁴ Benton and Farrell, Kansas City Southern Brief, p. 14; see discussion in similar tone by Mr. Prouty, Hearings, December, 1917, pp. 143, 144.

fact.¹ Mr. Prouty answered Commissioner Anderson's supposition that "it would be at least as easy to make an accurate estimate of the original production costs" by a denial:

Well it is not as easy, because we do not know the prices. We cannot get the prices as accurately. We cannot tell in a great many instances when the property was produced, and it is not as easy. Take property which has been developed from a single track into a double track, or from narrow gauge into broad gauge, or take the Kansas City Southern, which has been developed from a single track into a perfected single track. You cannot tell when those things were done, and I do not think you can tell what it actually cost to do it; but I have repeatedly said to the Commission that if you want that kind of an inventory, we can make a pretty good stab at it. We can tell when a bridge was built; we can generally tell when a culvert was put in, or when a rail was bought, or when a tie was bought, on the average, with considerable accuracy. So, if you want that kind of an inventory, we can give it to you, Mr. Commissioner, but it will not be as reliable as the reproduction inventory. It will be more of an estimate than that, and it will not be good for anything, in my judgment, when you get it.²

But, after all, the issue is not a question of ease; nor even a question of relative accuracy. It is one of principle. Even on the basis of accuracy, the skeptic may be pardoned: for cost of reproduction is, by definition, purely hypothesis. And certainly the Commission's "investment cost" cannot be said to bear any necessary relation to the cost of the present plant.

While an appraisal based on the cost of the units in place measures original cost to date, it does not measure unimpaired investment: the amount of original cost not used up in producing past service. An appraisal of accrued depreciation is still necessary in order to measure the amount of that cost which has been so used up; or, in accounting terms, to measure the depreciation reserve which would appear upon the books, did the

¹ Texas Midland, 1 Val. Rep. 1, 176.

² Hearings, December, 1917, p. 167. See also Mr. Prouty's argument, Hearings, January, 1920; and his Memorandum on Final Value, p. 12.

accounts show the actual economic (and business) facts. That the Valuation Act calls for no analysis in these terms, but only a vague cost to date, is further evidence of the inadequacy of that legislation.¹

VI. INTANGIBLES

The first series of Tentative Valuations found "no other values or elements of value . . . to exist":² a conclusion which the Commission, in the Texas Midland case, declared constituted full compliance with the requirements of the Act.³ The Kansas City Southern opinion, however, modified this holding: "No other values or elements of value to which specific sums can now be ascribed are found to exist."⁴ In the Texas Midland case the carrier had insisted that the law obligated the Commission to find and report any elements of value, while the Commission insisted that the carrier "name a figure which . . . should be found."⁵ Altho the latter failed to make claim in terms of dollars, it asserted that the following items constituted "other values and elements of value":

- (1) going concern value,
- (2) connection with other lines,
- (3) good station facilities,
- (4) gradients.⁶

¹ For discussion of the unimpaired investment concept, see *Railroad Valuation*, pp. 105, 106, 108-110, 114-121, and the references there cited.

² Tentative Valuation, Texas Midland, p. 2; Winston-Salem Southbound, p. 2; Kansas City Southern, p. 8. Mr. Brantley (A., B. & A. Brief, p. 410) asked that the finding be amended to read: "No consideration has been given to intangible values."

³ Texas Midland, 1 Val. Rep. 1, 71; see however, Protest, Texas Midland, p. 9; Winston-Salem Southbound, p. 6; Kansas City Southern, p. 55; Texas, New Orleans, and Mexico, p. 8. But no other values or elements of value were found for the Winston-Salem Southbound, 1 Val. Rep. 187, 206.

⁴ Kansas City Southern, 1 Val. Rep. 223, 292.

⁵ 1 Val. Rep. 1, 69; compare Notes and Comments, p. 220:

"As to other values and elements of value, the tentative valuation fails to comply with the law. . . . It is plain that the law requires these "intangibles" to be ascertained and reported . . . it is as much the duty of the Commission to investigate and ascertain the facts as it is to inventory the physical property in detail and show the several costs thereof as required." See also A., B. & A. Brief, pp. 388-409.

⁶ 1 Val. Rep. 1, 69.

The Texas Midland developed no evidence on these points, but to support the general contention, distinguished railroad men testified at length for the A., B. & A. and the Kansas City Southern.¹ The object was rather the establishment of the existence of such elements of value than their appraisal in dollars. The task of appraisal was left to the Commission as a part of the task imposed by the terms of the Act. "There ought to be some way," said Mr. Lamb.² And Commissioner Daniels has accepted the reasoning of the carriers, as is indicated by the following excerpt from his dissent in the Kansas City Southern case:

I am not satisfied with the negative finding proposed in this report to the effect that no other values or elements of value are found to exist to which a definite figure can be attached unless this finding be understood merely in the sense of a progress report. . . .

I do not concur in the intimation in previous valuation reports that the carrier's failure to show us the method to employ in estimating other values or elements of value or the carrier's failure to demonstrate to us the appropriate figure to be attached . . . constitutes the fulfillment of our affirmative duty in the premises. . . . The search for and the appraisal and reporting of these items for intangibles, if they exist, is an obligation imposed on the Commission."³

The franchise, as such, and franchise value have occupied a relatively small place in the discussion of intangibles. The Alabama Rate cases have been cited,⁴ and

¹ Hearings, March, 1917, pp. 18-47 (Mr. E. T. Lamb, President, A., B. & A.); pp. 49-63 (Mr. E. M. Durham, Jr., Valuation Engineer, A., B. & A.); pp. 307-309, 325-374 (Mr. J. F. Holden, Vice President, Traffic, Kansas City Southern); pp. 357-395 (Mr. R. J. McCarty, Vice President, Accounts, Kansas City Southern); pp. 565-580 (Mr. L. F. Loree, Chairman, Kansas City Southern).

Mr. Butler stated (*ibid.*, p. 873): "We are not going to develop any theories or any opinions as to what figure the Commission should set down separately for other values and elements of value." Compare Mr. S. W. Moore of the Kansas City Southern to the same effect, pp. 339, 346.

² *Ibid.*, p. 36; and see the excerpt from Mr. Butler's argument, 1 Val. Rep. 1, 69.

The promise contained in the Carrier Valuation Brief of 1915 has not been fulfilled: "The method by which these other values and elements of value should be measured will be submitted to the Commission at some later time." P. 532.

³ 1 Val. Rep. 223, 272.

⁴ 196 Fed. 649, 800; 197 Fed. 954; discussed critically, *Railroad Valuation*, pp. 147, 148; cited, *Carrier Valuation Brief* of 1915, p. 527; *Texas Midland Brief*, pp. 20, 28,

the fact that the A., B. & A. paid a franchise tax was put in evidence.¹ And that is all. The emphasis has rather been upon "going concern value" in terms of that "strategic" value which seeks to establish as "elements of value," the factors which make for larger gross earnings, or lower operating costs, and which, therefore, govern net earnings.²

The considerations which, it is alleged, make for this "intangible value" are

Density of population and traffic.

Nature and permanence of population and traffic.

Facilities for doing business, including interchange facilities.

Physical characteristics, governing operating conditions.

Even for the Texas Midland it was urged that a "value" should be found because of its connections, facilities, and gradients.³ For the Atlanta, Birmingham and Atlantic and the Kansas City Southern similar claims were substantiated by the testimony of the distinguished railroad men already cited. President Lamb indicated that investors would be influenced by the fact that the

190, 312, 419; Hearings, March, 1917, p. 22; no reference to this evidence appears in Mr. Brantley's brief, altho it is referred to in Protest, A., B. & A., p. 8.

¹ The Kansas City Southern Protest speaks of "the value of franchises and privileges . . . conclusively established against the carrier in the states of Missouri, Arkansas, and Texas by the assessing and taxing boards of those states." P. 67.

² See discussion, Railroad Valuation, pp. 150-153; also Hearings, October, 1918, p. 3, argument of Mr. S. W. Moore, General Solicitor of the Kansas City Southern, citing Northern Pacific v. The State, 147 Pacific 45, in which the Supreme Court of Washington upheld a valuation based upon "market value" for the purposes of taxation; Hearings, October, 1915, p. 164, argument of Mr. Sanford Robinson; and Texas Midland Brief, p. 380.

In the Texas Midland Brief, it is said:

"The value which is here designated as franchise value is in reality all the value in an assembled and established plant, doing business and earning money, over one not thus advanced, and not the value of the bare franchise alone." P. 418.

³ Texas Midland, 1 Val. Rep. 1, 69; Tentative Valuation, p. 15; and Hearings, March, 1917, pp. 866, 867, a letter from the Chief Engineer of the Texas Midland, in which the assertions are made. The fact that Texas taxed the Midland on the \$544,000 "intangible value," disclosed in this letter, is referred to in Notes and Comments, p. 221.

A., B. & A. "traverses a section of the country rapidly increasing in population and wealth."¹

More than this, the road interchanged traffic at twenty-eight points; it possessed the lowest grade from Birmingham to the seaboard, and had been increasing its trainload; net earnings had grown.² The Kansas City Southern officials gave parallel testimony, Mr. Holden, a traffic official, describing in detail the size and growth of the cities served, their commercial and industrial importance, the interchange facilities, the composition and growth of the traffic, and the organization and functioning of his department.³ The expressed purpose was "to prove that the Kansas City Southern possesses a volume of traffic passing over its rails amounting to . . . 4,000,000 tons of freight per annum, to show how that has been built up, and to show what the prospects are of its continuing and increasing in the future."⁴ And the Elgin, Joliet and Eastern (the Chicago "Outer Belt") has emphasized particularly "the density of the traffic over the railroad . . . by reason of its favorable location and connection with other railroads and industrial plants, etc., etc.⁵

The Texas Midland, Winston-Salem and Kansas City Southern cases testify to the truth of the assertions made by the carriers: traffic connections are listed; the density of traffic is summarized; the character of the adjacent country is described, and its products classified; the maximum grade and curvature is stated.⁶

¹ Hearings, March, 1917, p. 45. The growth of the tributary territory is exhibited at length, pp. 20, 21, and the increase in traffic density, p. 22.

² Testimony of Mr. Lamb, Hearings, March, 1917, pp. 19-23; summarised A., B. & A. Brief, pp. 410-416; also p. 402.

³ Hearings, March, 1917, pp. 307-374, including elaborate tables and diagrams by way of illustration, pp. 331-337; summarised, Protest, Kansas City Southern, pp. 58-65.

⁴ Statement of Mr. S. W. Moore, Hearings, March, 1917, p. 339.

⁵ Protest, E., J. & E., pp. 44, 46.

⁶ 1 Val. Rep. 1, 72, 81; 187, 202, 208; 223, 275, 323-328.

The A., B. & A. Protest insists that the denial of the existence of "other values," and a report, in the same document (the Tentative Valuation), of interchange facilities, terminals, developing traffic and favorable grades constitute a contradiction.¹ The criticism is at least pertinent. What is the function of data reflecting the forces which make for earnings if no "values" are assigned? The difficulty is, of course, the inherent one: to appraise these "elements of value" in terms of dollars necessarily involves a consideration of earnings, when those earnings are themselves under consideration. "Unless the so-called 'Other Values and Elements of Value' do produce a favorable effect on the net earnings, they are of no value."²

But if earnings be rejected, what of costs? The measurement of intangible "value," or "going value" by an accumulation of preliminary deficits below a fair return has been suggested to the Commission, which has, however, postponed discussion: "These deficits are not elements of value, but they are pertinent facts to be given consideration in a proper proceeding."³

¹ P. 9. The same claim is found in the Winston-Salem Southbound Protest, p. 6.

² To this statement, put in the interrogative by Mr. Farrell, Mr. Loree answered: "I should say not as affecting the market value of your securities, no." Hearings, March, 1917, p. 580. See the discussion in detail covering the essential question of principle, Railroad Valuation, pp. 150-153; and the analysis by Mr. Brantley, A., B. & A. Brief, p. 402.

In the Texas Midland Brief it is said:

"There are, of course, a great many operating plants whose total value exceeds their physical value by only a nominal amount. The other values and elements of value may be nominal in the case of an operating plant whose past performance and present and future prospects do not hold out the hope of success." P. 354.

³ Texas Midland, 1 Val. Rep. 1, 71. Compare Winston-Salem Southbound, *ibid.*, p. 198:

"Whether in fixing a value for purposes under the act to regulate commerce, we should increase the cost of reproduction by the amount of deficit which the carrier may have incurred during the early years of the enterprise, will be a proper consideration when we come to state a single sum as value of the common-carrier property for such purposes. That question we leave intact. As stated, in the final valuation herein made we have the basic facts. The record herein shows no other values or elements of value." The Texas Midland Brief, p. 453, recognizes "the logical difficulty in translating losses, actual and realized, or estimated and probable, directly into terms of value. It is not true that the greater such losses the greater is the value."

This conclusion (the steps by which it was reached are not given) is in accordance with sound reasoning. The Wisconsin deficit theory¹ is not valid since it purports to measure investment, not in terms of saving, of effort, of sacrifice, but by results.² But this is not the whole story. For the early "starving time" normally coincides with the period in which effort is expended (and funds are diverted) to the building up of permanent organization and external relations.³ It is even conceivable that a part of the original bookkeeping deficit may be due to those extraordinary maintenance charges representing net additions to plant investment — appreciation.⁴ These costs are not, however, limited to the carrier which shows an accumulation of operating deficits, or deficits below a "fair return." The costs of building up an organization and of establishing relationships — which are the important elements in long-run cost of producing service — have been incurred equally by the road which has been operated profitably from the first. In Mr. Prouty's words, "Going concern . . . costs something in the case of every railroad."⁵ But no usable method of appraisal has yet been suggested. The conjectural nature of the "valuation" of tangible assets has already been indicated. For an appraisal of "going value" this uncertainty is multiplied manifold.⁶

To be sure, the carriers have proposed a rule. Let "total value" be determined, and let the amount of the

¹ Which it would seem was in part responsible for the presence of the "other values and elements of value" in the Act. See Senate Report 1290, 62d Congress, 3d Session, pp. 94-99, 225-228, the testimony of J. R. Commons and B. H. Meyer.

² Railroad Valuation, pp. 166, 167. The Wisconsin Commission is cited at length, Texas Midland Brief, pp. 421-438.

³ Railroad Valuation, pp. 186, 187.

⁴ This argument is presented in the A., B. & A. Brief, p. 323 and following. At p. 324 Mr. Brantley said: "The matter of appreciation, or cost of development, naturally divides itself into two classes, the cost of developing the physical property, and the cost of developing the business."

⁵ Hearings, December, 1917, p. 162, an analysis of the fundamental economic problem. See Railroad Valuation, p. 187.

⁶ Ibid., pp. 185-187.

"physical value" (whatever that may mean) be subtracted in order to fix upon the other values and elements of value. But this is to make the intangibles a result, and not a cause, of "value."¹

VII. FINAL VALUE

The discussion turns then to the determination of "value." What principles govern value determination? A general formula is offered by the carrier interests: "Value in rate confiscation cases is the same as in condemnation cases,"² and in support of this contention a quantity of muddy paragraphs from court opinions is quoted.³ But in none of these opinions has the condemnation-regulation analogy been critically analyzed; and, indeed, had such critical analysis been made, before the force of precedent rendered sufficient mere citation of the "rule," its logical insufficiency must have been readily apparent. Whatever the history of the doctrine which would identify regulation as *pro tanto* condemnation, the fact is that regulation is not *pro tanto* condemnation, and that to consider it as such, and not to measure "value" independently of earnings, is to estop regulation.⁴ The analogy is premised upon the assumption that lower rates will reduce earnings, and to that extent, the value of the property,⁵ the difference between the old net earnings capitalized, and the new net earnings capitalized representing the "value" taken. From the nature of the case, no compensation is paid for this

¹ Kansas City Southern, 1 Val. Rep. 223, 270.

² Notes and Comments, p. 37; compare Texas Midland Brief, pp. 19, 81, 91; Texas Midland Reply Brief, p. 20; Hearings, May, 1915, p. 152, Mr. Sanford Robinson, citing Ames v. Union Pacific, 64 Fed. 165; *ibid.*, January, 1917, p. 308.

³ Texas Midland Brief, pp. 81-98.

⁴ Railroad Valuation, pp. 9-11, 15, 145, 146.

⁵ "How else justify the analogy at all? But to test rates by the value of the property before the act of regulation is made effective means the abandonment of regulation. And to test them by the value of the property, once the new schedules are in effect, means the approval of any schedule that may be established. The vicious circle is clearly present." *Ibid.*, p. 11.

"value" taken or destroyed. The purpose for which "value" is determined in a condemnation proceedings, and that for which it is determined in a regulation controversy is therefore quite different. In the rate case value is proposed as a measure of existing earnings, not, of earnings destroyed; in condemnation, value is a measure of that which is taken, of the consideration to be paid for the destruction of all earnings. The assumed analogy is not valid.¹

But the tactics of the carriers have been to ignore such logical analysis and to insist upon "what the cases say as to the nature and attributes of value."² In familiar terms, "value is power in exchange . . . the amount in dollars which a purchaser not under compulsion to buy will part with to obtain the item of property, and which the seller not under compulsion will accept for it." The carrier contentions on depreciation, deferred maintenance, appreciation, strategic value, and going value are readily explained in the light of this definition. Because a railroad worn to a state of normal depreciation will earn (gross) at least as much as a new road (other things being equal) it is "worth" as much. Because the roadbed of such a railroad will cost less for maintenance, it is "worth" more than a new roadbed.³ And a purchaser, influenced by conditions governing

¹ The parallel in language used in condemnation cases and in regulation cases has been due to the general inadequacy of the analysis, and to the uncertainty of the concept. In the Texas Midland Brief, after reviewing the series of Supreme Court opinions beginning with *Reagan v. Farmers' Loan & Trust Co.*, it is said:

"The foregoing cases remove all question of doubt as to the legal meaning of 'fair value' as that term is used in the case of *Smyth v. Ames*. It is 'just compensation' guaranteed by the constitution, the value of property taken in condemnation cases, and that value on which fair return must be allowed in rate cases. Every prescribing of rates is a taking of property, and under the constitution there must be just compensation." P. 91. See discussion of *Knoxville Water Co. v. Knoxville*, 189 U. S. 434, Railroad Valuation, pp. 14, 15.

² Texas Midland Brief, p. 73.

³ Mr. Prouty has said, "It is universally admitted that an old and seasoned roadbed is worth more for the transaction of business than a new one. The same traffic can be handled over it for less cost, or more traffic for the same cost." Memorandum on Final Value, p. 4.

traffic density and operating costs, will pay more for the established property in a developing community. Net earnings are, therefore, the important element. The "physical value" is only important since by its deduction from total value — however that value may be determined — the intangible value or "going value" is determined.¹ So runs the carrier argument.

The decisions relied upon as precedents upholding this contention are tax and condemnation opinions, the leading tax cases being the Express Company cases and C., C., C. & St. L. *v.* Backus; the leading condemnation case being Monongahela Navigation Company *v.* United States. In the latter case, the Court said:

The value of property, generally speaking, is determined by its productiveness — the profits which its use brings to the owner. . . . The commerce on the Monongahela River, as appears from the testimony is great. . . . A precisely similar property, in a stream where commerce is light would naturally be of less value, for the demand for the use would be less. The value, therefore, is not determined by the mere cost of construction, but more by what the completed structure brings in the way of earnings to its owner.²

And there is the "very apt illustration" in the Backus case:³

Suppose there to be two bridges over the Ohio, the cost of the construction of each being the same, one between Cincinnati and

¹ After devoting over a hundred pages to an exhibition of precedents, the Texas Midland Brief falls back upon this subtraction program:

"The value of the property is to be determined as a whole (value is singular in fact and substance the capable of analysis in thought and discussion) and the other values and elements of value may be found by subtracting the amount attributable to the physical elements, the so-called 'physical value' from the value of the whole." P. 475.

The same "rule" is stated by Mr. Butler, Hearings, December, 1917, p. 49; compare Re Marin Municipal Water District, P. U. R. 1915-6, 433 (Cal.), a condemnation case quoted at p. 375, and Appleton Water Works Co. *v.* R. R. Commission of Wisconsin, 154 Wis. 121, a condemnation case, quoted, pp. 434-436.

The Kansas City Southern Reply Brief, p. 10, cites a series of cases (L. & N. Ry. Co. *v.* Greene, 244 U. S. 522; Greene *v.* L. & I. Ry. Co., p. 499; Illinois Central *v.* Greene, p. 555) involving a Kentucky statute which determined "value" by the capitalization of earnings, the assessed value of the tangible property being deducted to determine the value of the intangible property.

² 148 U. S. 312, quoted at length, Kansas City Southern Brief, pp. 110-112.

³ *Ibid.*, p. 61.

Newport, and another twenty miles below, and where there is nothing but a small village on either shore. The value of the one will, manifestly, be greater than that of the other, and that excess of value will spring solely from the larger use of the one than of the other.¹

Railroad valuation based upon earnings represents then merely the application of "the methods and processes ordinarily employed in every-day affairs in arriving at the value of any industry or any commercial enterprise."² The claim had been asserted in general terms by Mr. Brantley, but not emphasized. Its elaboration was the task of the Kansas City Southern counsel. Did not Justice Harlan in *Smyth v. Ames* include "probable earning capacity . . . and operating expenses" in the items "to be given such weight as may be just and right in each case?"³ This was "precisely the rule" for which Mr. Moore of the Kansas City Southern contended.⁴

¹ 154 U. S. 439.

In the Express cases the Court defined value in terms of the power to produce income, or for the purposes of sale. 166 U. S. 185.

* Kansas City Southern Brief, p. 107. The Brief further declares:

"The principles which determine the valuation of the business of the corner grocery store . . . are the same as those which determine the valuation of railway properties. The ultimate question is what the property may reasonably be expected to produce in the way of profits. . . . The experts in this case have done nothing more than to apply these plain simple rules to the determination of the value of the properties of the carrier."

* See A., B. & A. Brief, pp. 22, 26. The Texas Midland Brief, altho quoting the rule in *Smyth v. Ames*, nowhere specifically asks for a value determined by any "fixed rule." See the typical discussion, pp. 451-468, and especially pp. 457 and 467. In the A., B. & A. Brief, Mr. Brantley says:

"It is obvious that where the amount of earnings is the thing in dispute, earnings cannot be capitalized and made the sole measure of value. Notwithstanding the difficulty of the problem, however, the courts have never departed from the principle that value must be determined, nor have they departed from or abandoned any of the fundamental principles for determining values . . . in *Smyth v. Ames* . . . far from departing from the principle of market value, the court distinctly reaffirmed that principle . . . earnings must be considered. . . . The Supreme Court in the Missouri Rate cases, 230 U. S. 74, specifically stated that earnings could be properly considered in reaching a conclusion. . . . The difficulty encountered by the Supreme Court was the extent to which they could consider income and market value." Pp. 26, 27.

* Hearings, October, 1918, p. 33; compare discussion by Mr. Moore, *ibid.*, p. 7. Mr. Farrell, *ibid.*, p. 18, stated that he had come to a conclusion which in substance corresponds with that expressed in *Railroad Valuation*, p. 18:

"I have come to the conclusion that what Mr. Justice Harlan had in mind when he wrote that opinion was this, that after having fixed the value in a rate case the tribunal,

The course of the argument is in the following terms. The carrier's net earnings for the year ending June 30, 1914, capitalized at 6 per cent amounted to \$58,587,-933.¹ Now, if it were known with "absolute certainty" that these earnings would continue constant, "then it could be said without fear of contradiction that the properties of the carrier, upon a 6 per cent basis were worth that capitalized amount."² But there is no such assurance of constancy, and the continuance of the 1914 earnings, and their probable future increase or decrease must be considered in order to arrive at "an intelligent determination of value."³ So, if future earnings are to decrease, is it not "absolutely definite and certain" that the enterprise will be worth "materially and substantially less than the amount of its capitalized net earnings at the time assumed?"⁴ And is not the converse true? Two expert calculations, based upon prophecy of the future increased earnings, showed pres-

for the purpose of determining whether its rates are reasonable, must observe how much gross the carrier will earn upon that value with particular rates prescribed, take out of that the sum required to meet operating expenses, in order that it may also observe how much then will be left, and how much per cent that will be upon the value of the property."

The Express Company cases (*Adams Express Co. v. Ohio State Auditor*) rose out of a tax law providing that the entire value of the express companies, both tangible and intangible, should be ascertained, and that there should be assessed in Ohio the proportion of this entire value ascertained upon a mileage proportion — an assessment greater than the "physical values" within the state. 166 U. S. 185.

Mr. S. W. Moore, the carrier's solicitor, speaking at the October, 1918, Hearings, quoted the Express Company cases at length concluding with the paragraph:

"The value which property bears in the market, the amount for which its stock can be bought and sold, is the real value. Business men do not pay cash for property in moonshine or dreamland. They buy and pay for that which is of value in its power to produce income or for purposes of sale." Pp. 4, 5.

¹ Kansas City Southern Brief, p. 98.

² Ibid. The Brief continues:

"They would be worth that to an investor for purposes of income and for purposes of sale. They would also be worth that in the markets of the world. They would be equivalent to a bond in that sum running indefinitely in the future bearing 6 per cent interest from date."

³ Ibid., p. 99.

⁴ Ibid., pp. 102, 103. The figures presented (including both those which assumed a future decline in earnings, as well as those assuming a future increase) were based upon calculations seeking to apply the following rule:

"The value of a thing is measured by the sum of the amounts expected to be received from it, discounted to the time of expected receipt." P. 80.

ent value figures of \$82,593,184 and \$74,274,453, the difference being due to the difference in the rate of increase assumed.¹ Moreover, the average market value of the outstanding securities during the five years preceding valuation date (a period during which the witnesses asserted the prices of securities had been "unduly depressed") amounted to \$62,173,595, "the one inference to be drawn being that the true value of the properties was in excess of that sum,"² altho value is elsewhere defined in terms of the market.

In answer to the assertion that "if the value depends upon the earnings, in turn the earnings depend upon the value, and so you are going around in a circle,"³ it was urged that a presumption of reasonableness attaching to the existing rates avoided this difficulty.⁴ It was even "confidently" asserted that the law which required the Commission to establish and maintain reasonable rates "effectively" prevented the reduction of the existing schedules.⁵ "Any reasonably informed and experienced

¹ The Brief says:

"The weight to be attached to the foregoing computations made with respect to the projections of future net earnings as estimated by Mr. Wymond and Mr. Kinear, obviously depends upon the accuracy of their estimates, and this in turn, involves a matter of judgment upon which they have given their expert opinion. Is this not, after all, merely the application to the valuation of railway properties of the methods and processes ordinarily employed in everyday affairs in arriving at the value of any industry or any commercial enterprise?" Pp. 107, 108.

² Ibid., pp. 123, 124; the Texas Midland Brief, p. 11, rejects the market value of securities on the ground of fluctuation.

³ Hearings, October, 1918, p. 9. See the argument, based upon the vicious circle, Reply Brief of Messrs. Benton and Farrell, pp. 88-97, an adequate answer to the carrier contention.

⁴ Kansas City Southern Brief, p. 88. The Texas Midland Brief, without developing an argument based upon the premises, states (p. 457): "Legally established schedules of rates are *prima facie* reasonable. One who asserts the contrary has the burden of proof." The Kansas City Southern Brief, says (p. 89): "Here we are not only aided by the presumption arising from the fact that nearly all of the rates in question were fixed or approved by an administrative body charged with the duty of making rates, but there was introduced at the hearing affirmative testimony in support of their reasonableness. Are we not warranted, therefore, in asserting that their reasonableness has been established in this case, particularly in the absence of any countervailing testimony offered by our adversaries?"

⁵ In his dissent Commissioner Daniels denies that any binding presumption of reasonableness attaches to existing rates. The point is not discussed in the majority opinion. Kansas City Southern, 1 Val. Rep. 223, 271. ⁶ Kansas City Southern Brief, p. 90.

business man ready, able, and willing to invest his money in the property would so conclude.”¹ — And why? Because the general rate structure into which the Kansas City Southern schedules were adjusted, could not, it was assumed, “be further reduced without injuriously affecting some members of the group composed of the carrier and its four competitors, and thus becoming unreasonable as to them.”² The value of the Kansas City Southern is to be determined by the capitalization of earnings because competitors less advantageously circumstanced could not, under lower rates, earn a reasonable return.³ But how is the “reasonable return” of the competitors to be measured? No clear statement appears. But a “value” representing a capitalization of earnings is proposed: “at the valuation shown by the capitalization of net earnings for that period, the rates were barely compensatory, and substantially less than reasonable rates.”⁴ Accordingly

¹ 1 Val. Rep. 94.

² Kansas City Southern Brief, p. 91; an argument along these lines is hinted, but not developed. A., B. & A. Brief, p. 20. This argument also Commissioner Daniels discusses, Kansas City Southern, 1 Val. Rep. 223, 271, 272.

³ The authority for this “principle” is Judge Trieber, who in the Arkansas Rate cases, 187 Fed. 290, stated “in clear and concise language” what the attorneys for Kansas City Southern conceived to be “the common and accepted judgment of business men upon the subject.” Brief, pp. 70-73. At p. 117 the Brief further says:

“The carrier is justly entitled to its advantages arising from its large volume of business and its low operating cost. Provided only that its rates for each individual service are reasonable in themselves, its profits which arise from the greater volume of its traffic are legitimate profits and should be taken into consideration in the determination of value.” In support, Cotting v. Goddard, 183 U. S. 79, a stockyards case is cited.

⁴ Kansas City Southern Brief, 92:

“The scale of rates in effect on valuation date yielded the Cotton Belt a 6 per cent return on but \$22,567 per mile, and the Missouri, Kansas & Texas upon \$31,476 per mile. If the values of those two railroads on valuation date are fairly represented by those amounts respectively, then, as to them, the rates were barely compensatory, which is substantially less than rates which are reasonable.”

The four competitors are the St. Louis, Iron Mountain & Southern, the St. Louis & San Francisco, the St. Louis Southwestern (Cotton Belt) and the Missouri, Kansas, & Texas.

It was asserted, building upon Mr. Prouty’s language in the Eastern Advance case, that the return to the railroad presented a different problem from the return to a local public utility, a gas or water plant, since a “differential” appeared in competitive operations which could not appear in the earnings of a monopolistic local utility. See the discussion, Texas Midland Brief, p. 458; and Kansas City Southern Brief, pp. 44-49.

it is suggested that the rates should be increased, altho for the purpose of the argument it is sufficient to prove that the existing scale cannot be further reduced — a fact "abundantly established" by the "foregoing computations."¹

The problem presented in these terms and the essentials of the argument are not new.² The difficulty arises from the failure to recognize that there is no single rate of return which can be labeled as "reasonable" and applied to all carriers alike.³ The same premise is fundamental in the argument which asserts that the railroad surplus presumably represents the results of exploitation.⁴ But the premise is fallacious:

Existing railroads do not represent the same exercise of judgment in original planning, the same efficiency in creating and maintaining

¹ Kansas City Southern Brief, p. 93. Mr. Untermyer has said:

"If you should reduce our rates, all the rates in that territory, so that we could get 6 per cent and our competitors get nothing, we could not claim that the rate was confiscatory, but you could not reduce the rate as to us without reducing it as to them, and they could claim it is confiscatory." Hearings, October, 1918, p. 35.

But if the value is dependent upon earnings, it would seem that the road with no net earnings would have no value, upon the same basis that the value of the Kansas City Southern would be shrunk. The argument is ingenious and plausible, but it does not avoid the vicious circle which would measure value by the capitalisation of earnings which themselves are to be measured in terms of that value.

² See Railroad Valuation, pp. 150-153, 202-205, and the references there cited, especially S. O. Dunn, American Transportation Question, p. 93 and following.

³ Ibid. The omission of analysis is not limited to the carrier interests alone, as is indicated by the following statement of Mr. Farrell:

"It might be true that if you had determined the amount of money upon which a particular railroad had a right to a fair return, you would find that the company was in fact obtaining a net return which was more than a fair return upon that amount of money; and it might further be true that in view of some of the conditions which existed in the same general territory you would think best to allow that carrier to continue to earn more than a fair return. But that would be the good luck of that carrier, and not its constitutional or other legal right. That is the point I make. When people claim that they have a constitutional right to more than a fair return because of the condition of some other carrier, then I say that no such right exists." Hearings, December, 1917, p. 127.

The idea of the fair return as a single rate is inherent also in the basis of the following statement of Mr. Farrell:

"If they did use poor judgment in locating a railroad the cost might be \$1,000,000, but they might not be able to earn, as a matter of fact, might not have a right to earn on more than \$500,000, simply because they could not do so without exacting unreasonable rates." Hearings, March, 1917, p. 427.

Compare Mr. Samuel Untermyer's discussion, *ibid.*, October, 1918, p. 34

⁴ Railroad Valuation, pp. 171-173. See also the discussion of "unproductive improvements," pp. 195-198, and Texas Midland Brief, pp. 312, 313.

an organization, in establishing relations with shippers and passengers, in solving operating problems. Clearly focused are seen the forces which make for the differential element in business profits. The mode in which this differential accrues to the better located, better managed roads can be readily indicated. Location is important from two points of view: from that of ability to secure large gross earnings, and from that of economical transportation of the traffic secured. The latter refers simply to the physical characteristics: to strategic location in a river gorge, to the possession of a water level route — which mean a lower ruling grade, less curvature, and therefore, other things being equal, a larger margin between operating expenses and revenue than would be possible were the road operated through the hills or mountains. It is the old question of the New York Central and the Pennsylvania, the one operating through river valleys and along the lake shore, going around the mountains, the other cutting through. An extra gain comparable to a site rent appears, as a reward for skill in original location—perhaps even for the one company having first dared risk the cost of building.

Location has also an important bearing upon the quantity and classification of freight transported, and upon the density of the passenger traffic; and, consequently, upon the amount of the gross earnings. . . . In the light of the composite nature of the railroad return, it would, therefore, appear well-nigh impossible to isolate an element of unearned increment.¹

Under a given schedule of rates, it is almost certain that unequal net earnings will accrue to carriers differently circumstanced. The Commission has itself recognized that the more fortunate competitor, "when its rates had been just and reasonable," may accumulate a surplus at the same time generous dividends are earned.² This is in reality a recognition of the fact that

¹ Railroad Valuation, pp. 203, 204.

The Kansas City Southern Brief compares five railroads with five farms, and seeks to show that value is determined upon the same basis: the capitalization of earnings (economic rent). Pp. 41, 42.

² See paragraph quoted by Mr. Moore, Hearings, October, 1918, p. 5, from the Spokane case, 15 I. C. C. 376, 415. The same paragraph is quoted in the Texas Midland Brief, p. 459. Other cases, quoted to show that the Commission has held to the rule that "the entire situation" should be canvassed are quoted, pp. 459-467. Receivers & Shippers Ass'n of Cincinnati v. C., N. O. & T. P., 18 I. C. C. 440; Com'l Club of Salt Lake City v. A. T. & S. F., 19 I. C. C. 218; Superior Com'l Club v. G. N., 24 I. C. C. 96; Coke Producers, etc. v. B. & O. R. R., 27 I. C. C. 125; Eastern Advance case of 1910, 20 I. C. C. 243; The Five Per Cent case, 31 I. C. C. 351.

the fair rate of return is a variable. But because the fair return is looked upon, not as a variable, but as a constant to apply to all roads alike, it is insisted that the only way to secure a basis upon which to measure the reasonableness of the return, is to capitalize the earnings on the basis of the rate fixed upon as fair. A more obvious example of circular reasoning is hard to imagine.

If, then, the "value which inheres in a property, and which is represented by its productiveness, its profitability, its earning power,"¹ be rejected as the basis of a final value, which, being determined, can be used as a measure of reasonableness, what guide shall the Commission use in its task of fixing the single sum to be set in those "further" tentative and final valuations which are to be duly issued?² Certainly the Act offers no help either by way of definition or of formula. Value would seem to be one thing, and cost quite another — a "cost value" is indeed *sui generis*:³ small wonder that Mr. Prouty despaired: "I would rather undertake to recite the Chinese alphabet backward than read the thing anyway, because it does not mean anything after you have read it."⁴ But "value" is not determinable by formula:⁵ "The ascertainment of that value is not

¹ Mr. Moore, Hearings, October, 1918, p. 9.

² Texas Midland, 1 Val. Rep. 1, 7.

³ Hearings, March, 1917, p. 411. Mr. George S. Patterson, of counsel for the railroads: "The contention of the carriers is that under this Act, the Commission is required to ascertain one figure representing present value of the property owned or used by the carriers; that value means value, and does not mean cost, neither does it mean a combination of cost and value." See also A., B. & A. Brief, p. 395.

⁴ Hearings, March, 1917, p. 674. These words were spoken after Mr. Prouty had served nearly four years as Director of Valuation. Compare his language in the Advance case of 1903, 9 I. C. C. 382, 404; quoted and discussed, Railroad Valuation, p. 26.

⁵ It would seem from statements of Senator La Follette, who sponsored the bill in the Senate, that the omission of a "formula" was intentional: "The bill does not undertake to direct the Commission as to what relative weight should be given the several valuations they are authorized to make." 49 Congressional Record, p. 3797; see also pp. 3796, 3802. Mr. La Follette was speaking prior to the Minnesota Rate cases. opinion.

controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts." ¹ It would indeed seem that "we are sailing on an uncharted sea, without a compass to guide us." ²

"Guides to judgment" have been suggested: "There are no cases where the value of a going concern of adequate capacity has ever been determined to be less than the cost of reproduction less depreciation of the used and useful property either in a condemnation case or a confiscation case." ³ On the contrary these cases "fully sustain the proposition that the cost of reproduction less depreciation is the measure of minimum value of any going railroad capable of use to justify such value, irrespective of the return from present value at present rates." ⁴ This assertion is not necessarily inconsistent

¹ 230 U. S. 352, 434. (June 9, 1913, slightly over three months after the passage of the Valuation Act.) The words quoted in the text are a favorite citation of Mr. Pierce Butler. See, for example, Texas Midland Brief, pp. 18, 27, 74, 156, 195, 228, 451, 456, 468, 797; and Hearings, May, 1915, pp. 107, 112.

² Mr. Charles Hansel, *ibid.*, March, 1917, p. 817. In the Texas Midland Brief (p. 456) it was said: "The ascertainment of value cannot be reduced to formula. It is an ultimate fact to be arrived at by a consideration of many other facts and circumstances." At p. 452, it had been said:

"It seems to us that all efforts to prescribe exact rules for determining what weight shall be given by the Commission to any fact or class of evidence necessarily must fail. Experienced judgment must be exercised in the light of all the ascertainable facts which are required to be found and reported. The weight to be given to any such fact or group of facts depends upon judgment and the other established facts and circumstances of the case."

³ *Ibid.*, p. 75.

⁴ *Ibid.*, p. 136. This is quoted from the caption of a table in which are listed original cost, cost of reproduction new, and less depreciation, and "ascertained value" as found in sixty-four cases, pp. 136-142. The following (*ibid.*, p. 483) offers a proposed use of the reproduction figures:

"We think it would be proven when the valuations are completed that the present earnings of all the carriers in each rate territory taken as a whole will be found to be less than a fair return upon the cost of reproduction new of the property used for transportation purposes in the territory. If this shall prove to be the fact, then the rates prevailing in such rate territory shall be assumed to be horizontally raised by a percentage sufficient to produce net earnings of at least 6 per cent upon the total cost of reproduction new of all property used for common carrier purposes in the rate territory, and the earning capacity of the carrier under such assumed reasonable rates shall be ascertained and reported in determining value."

with the claim that "it is true as a general rule that a railroad which was built to meet a reasonable public need for its service, which was well located and constructed and which has been properly maintained and is in a suitable state of efficiency, is worth more than its cost of reproduction new."¹ Cost of reproduction less depreciation is claimed to set only a minimum in any case; and further, the carrier would measure reproduction less depreciation and cost of reproduction new by the same amount (in dollars) since it is claimed that in the absence of deferred maintenance there is no depreciation. The argument based on the appeal to authority is complete.²

Furthermore did not Justice Hughes, in the Minnesota Rate cases, say that "cost of reproduction is of service, when it is reasonably applied, and when the cost of reproducing the property may be ascertained with a proper degree of certainty?"³ And is not cost of reproduction "a fundamental, tho not necessarily a controlling element in value?"⁴ Mr. Prouty himself has called "cost of reproduction . . . one and perhaps

¹ Texas Midland Brief, p. 397; compare Texas Midland, 1 Val. Rep. 1, 7:

"The carrier has stated its views . . . in oral argument and has fortified its oral argument by written briefs, in which it has fully set forth its claim, that, in the instant case, reproduction cost new is the sum which is to be stated as value." See Hearings, December, 1917, p. 49.

Mr. Prouty, *ibid.*, December, 1917, referred to the precedents:

"You have heard of the Consolidated Gas case . . . that valuation was made up by taking the cost of reproduction new and including as a part of that, interest during construction and all these overheads . . . the same thing was true in the Knoxville Water case . . . the Cedar Rapids case . . . the Des Moines Gas case." P. 82.

² The following quotation from C., C., C. & St. L. v. Backus is also a favorite:

"The true value of a line of railroad is something more than an aggregation of the values of separate parts of it, operated separately. . . . A notable illustration of this was in the New York Central Railroad consolidation." 154 U. S. 439, 444; quoted Texas Midland Brief, p. 120; Carrier Valuation Brief of 1915, p. 483; A., B. & A. Brief, p. 400.

³ Mr. Moore, Hearings, October, 1918, p. 9.

⁴ Report, Railroad Securities Commission, 1911, p. 18. "Eminent railroad men" had stated to the Commission "that in their opinion cost of reproduction or physical value was the most important single element in determining the true value of the railroad as a whole."

the most important element in determining fair value,"¹ while Mr. Farrell (who, presumably, was qualified to speak for the Bureau of Valuation) has said: "we think that the cost of reproduction, properly so-called, may be used in estimating the value of common carrier property other than lands."² But there is nothing in either the Texas Midland, Winston-Salem Southbound or Kansas City Southern opinions to indicate what weight the Commission feels should be given to cost of reproduction as a "basic fact."³ Presumably, the Commission is reserving a holding upon this point until such time as an opinion is called for by the facts of the case before it. Such an attitude would be consistent with previous policy.⁴

But what should be the place of cost of reproduction in the determination of "value"? It would seem probable that the assumed identity of cost of reproduction less depreciation and present value is due largely to an implied comparison of the freely reproducible

¹ Eastern Advance case of 1910, 20 I. C. C. 243, 261. The A., B. & A. Brief, p. 64, calls "present cost of construction or the cost of reproduction . . . the recognised basic factor."

² Hearings, December, 1917, p. 135. The phrase "properly so-called" refers to the Commission's definition of reproduction as contrasted with that proposed by the Minnesota Commission. See discussion, above, p. 11.

³ See for example, Winston-Salem Southbound, 1 Val. Rep. 187, 198. In his Memorandum, p. 6, Mr. Prouty said: "This cost of reproduction does not necessarily represent the fair value upon which the carrier is entitled to a return, but what it does represent is clearly and exactly known."

Mr. Brantley emphasizes the present tense found in the court opinions, and the emphasis on "present value"; A., B. & A. Brief, pp. 49-51, and at p. 65: "present value . . . what it would now cost to reproduce it"; and Hearings, December, 1917, p. 25:

"You come down to the question of how you are going to ascertain the value of them. Now, if it is cost, it must be the cost measured by the conditions at the time at which you ascertain the value. That is so because, in the first place, the Supreme Court has, time and again, said it is so. They say it is that property, and not the cost of it, which is protected by the Constitution. . . . The value that is involved in a rate case is the value at the time of the service. So that if that value is to be predicated upon cost, it must be the cost at that time of reproducing the property . . . it must be present day cost." See Railroad Valuation, pp. 97-102.

⁴ See Hearings, January, 1917, p. 50. At the December, 1917, Hearings, Mr. Prouty addressed the Commission: "As a general rule, when it was possible to do so, you have avoided expressing any direct affirmative approval, as I understand it." P. 142.

commodity, whose market value tends to approximate reproduction cost, and the railroad which is not freely reproducible.¹ Surely a man can afford to pay as much for a machine already built as he would pay for an exact duplicate. Should not the same rule apply to the railroad? The difficulty arises from the unfortunate presence of the word "value" in the judicial doctrine, without definition of the word. In seeking a measure of reasonableness, the task is not one of fixing a selling price at all, but rather of fixing upon a measure of a part of the long run cost of production: the return to the investor. There is to be no "obliteration," and if calamity should destroy an entire railroad system (so that it was not worth while to make new investment, in order to realize on original portions not destroyed) there is no assurance of rebuilding. Certainly one can be very skeptical that any long headed business man would reproduce say the Texas Midland, unless future prospects, rather than present returns governed his calculations.²

And if cost of reproduction constitutes value, upon this alternative theory, should not it apply with equal validity to land? Are not the figures reported by the Commission obviously incomplete, if cost of reproduction, as such, shall measure "value"? No figures of the cost of reproducing or "reacquiring" the carrier lands have been reported or determined. The Commission and its Bureau of Valuation, in Mr. Farrell's frank phrase, have made no attempt to comply with the requirement of the act in this regard.³ The authority

¹ See Marshall, *Principles of Economics*, pp. 401, 402, and *Railroad Valuation*, pp. 97-102.

² See *Texas Midland Brief*, p. 24; and *Railroad Valuation*, p. 99. In the former it is stated: "Railroad service is essential to the industrial and commercial interests of each such territory, and if the railroads did not exist they would be promptly reproduced."

³ Brief, *Texas Midland Case*, p. 47. See A., B. & A. Brief, pp. 500 and following, and Hearings, May, 1915, pp. 104, 114, 120, 131; January, 1916, pp. 146, 147; December, 1917, p. 96; January, 1917, p. 267.

In addition to the general responsibility placed upon the Commission to determine cost of reproduction, the Act directs an investigation and report of "present value" and

for this omission is the opinion of the Supreme Court in the Minnesota Rate cases:¹

The conditions of ownership of the property and the amounts which would have to be paid in acquiring the right of way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination. The cost of reproduction method is of service in ascertaining the present value of the plant when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty. But it does not justify the acceptance of results which depend upon mere conjecture.²

Because the estimate could be made "only upon inadmissible assumptions and upon impossible hypotheses," as indicated in the paragraph just quoted, the Commission felt that the "duty to abstain from reporting as an ascertained fact that which is incapable of rational ascertainment" was "clear,"³ a holding reiterated in

"original cost" and "separately the original and present cost of condemnation and damages or of purchase in excess of . . . original cost or present value."

The carrier demand has been that "the mandate of the Congress should be followed," that "the Valuation Act should be obeyed according to its plainest terms." Notes and Comments, pp. 21 and 34. The Kansas City Southern brought suit against the Commission in the Supreme Court of the District of Columbia, seeking a writ of mandamus to require the Commission to investigate and report the "present cost of condemnation and damages or purchase" of the right of way and lands. The carrier appeal to the United States Supreme Court from the decision of the Supreme Court of the District of Columbia was decided March 8, 1920. See *Kansas City Southern*, 1 Val. Rep. 223, 262.

¹ 230 U. S. 352, 452. See *Railroad Valuation*, p. 37; and the *Carrier Valuation Brief* of 1915, pp. 315-370, as there cited.

To Mr. Brantley's mind, it was "perfectly absurd to suppose that the Supreme Court could have condemned a method of ascertaining the cost to reproduce a railroad, which had been in use for twenty-five years." He was "amazed and astonished at . . . the State Commissions, almost every one of whom had been engaged . . . in ascertaining the cost of reproduction of land." Hearings, January, 1917, p. 314.

² *Texas Midland*, 1 Val. Rep. 1, 60. Also:

"We are unable to distinguish between what is suggested by the carrier in this record, and nominally required by the act, and what was condemned by the court as beyond the possibility of rational determination." *Ibid.*

The carriers proposed the use of the multiple short-cut method for determining cost of reproduction, tho the figures presented in the *Texas Midland* case purported to represent expert opinion of the cost of reacquiring the land of the railroad, the multiples being average figures, compiled from these data. *Texas Midland Brief*, pp. 904-907.

See also Prouty, Memorandum, p. 53, where it is acknowledged that a figure of cost of reproducing (reacquiring) lands could be calculated by applying a multiple; but Mr. Prouty urged the Commission not to expend the considerable sum which would be necessary to ascertain "a fact most doubtful when ascertained, most productive of dispute and litigation when announced, and which has been held by the court of final resort to be of no possible value."

the Kansas City Southern opinion.¹ But the Supreme Court ordered that the mandate of Congress be obeyed, "as Congress indisputably had the authority to impose upon the Commission the duty in question." The use to be made of figures purporting to show hypothetical cost of reacquiring the land is a subject to be considered in a controversy growing out of the duty when performed.²

Cost of reproduction, moreover, introduces into the standard of measurement, a factor quite extraneous to the business of furnishing transportation — the effect of a shifting level of prices and wages. Already it has been asserted that the cost of reproduction based upon June 30, 1914 is "as much out of date as if . . . made a quarter or half a century ago."³ Certainly if cost of reproduction is an end in itself, this objection is a valid one, as, indeed, it would seem the Commission has recognized.⁴ But it was in terms of investment, of cost, that the calculations of enterpriser and investor were made; and, in the long run, the reward for investment,

¹ Kansas City Southern, 1 Val. Rep. 223, 258-263. See also the discussion in the Texas Midland case, 1 Val. Rep. 1, 62. The Minnesota Rate case is discussed at length, Texas Midland Brief, pp. 217-245; Reply Brief, pp. 70, 306 and following; A., B. & A. Brief, p. 590 and following. The Kansas City Southern Brief referred to and "adopted" the Texas Midland argument, p. 283. The statement of the carrier stand given in the Texas Midland case by the Commission seems an adequate summary of the protracted discussion.

² United States, ex rel. Kansas City Southern Ry. Co. v. I. C. C., March 8, 1920.

³ Notes and Comments, p. 240; also Texas Midland Reply Brief, p. 108.

⁴ The Commission met this objection in the Winston-Salem Southbound case by the following language:

"The prices employed by the Bureau of Valuation are not the exact prices which were necessarily in effect upon the precise date, June 30, 1914, but were fixed with relation to that date in such a way as to produce normal prices for periods ranging from 5 to 10 years prior thereto. The use of such unit prices upon items entering into the cost of reproduction of road and equipment (other than land) will permit consideration of the carriers upon a uniform basis as to time, so that as the normal trend of prices of material and labor may go upward or downward correction factors can readily be applied from time to time, as by law required, to the end that all appraisals may be kept to date upon a comparable basis." 1 Val. Rep. 187, 192. But see Prouty, Memorandum on Final Value, p. 15.

risk assumption, and the direction of enterprise must be met in the case of the railroad which could justify the building. Analyzing the problem in this light, cost of reproduction is repudiated as a logical basis by which to measure the "long run" — the reasonable return.¹

But may not cost of reproduction (assuming accuracy) be taken as a rough measure of the investment? Much of the existing plant has been built or acquired during the period of price advance, and for such portions, original cost and cost of reproduction might well coincide within reasonable limits of approximation.² But the approach of the Commission has been such as to render such coincidence purely accidental. It is obvious enough that the governing conditions imposed by the hypothesis are generally at variance with the conditions which governed actual construction:

The theoretical reproduction of a railroad, such as is assumed in valuation work, is materially different from the original construction. . . . In *theoretical reproduction* the property to be constructed by the engineer is before his eyes. The topography of the country through which the right of way runs can be observed. He knows the natural difficulties which will have to be overcome. If rock is found, his estimate is based upon cutting through or removing that rock. The *exact* amount of materials above the roadbed is capable of ascertainment, and no addition should be made for materials omitted.³

Moreover many railroads were pioneer enterprises, and some even extended into hostile Indian country where

¹ Railroad Valuation, pp. 102-107.

² This is suggested in the following paragraph from the Texas Midland opinion:

"While the Commission is not as well informed today as it hopes to be before the end of its work, we are prepared to state with considerable confidence that the cost of producing and equipping a railroad in most parts of this country on June 30, 1914, was a fair average for at least the 20 years preceding. There had been many changes during that period. Some prices had advanced while others had declined. The cost of labor had somewhat increased, but improved methods tended to offset this increase. On the whole, the 1914 cost was just about an average for those previous years during which the great bulk of the railroad property then in use had come into existence." 1 Val. Rep. 1, 140.

³ Texas Midland, 1 Val. Rep. 1, 25; italics the writer's.

there were neither roads, nor railroads.¹ And often (how often, who can say?) the most economical construction program was not employed.² But quite aside from this consideration, which raises questions of ignorance or dishonesty,³ the reproduction hypothesis represents a conscious attempt to represent the cost of building and equipping the road "as economically as possible under existing conditions"⁴— "by a single continuous impulse."⁵ That "the present railroads of this country are the product of a process of gradual development," that "the narrow gauge road has passed into the standard gauge, the low class into the high class, the single track into the double track," that "grades have been improved, curves eliminated"— "all this is disregarded."⁶ Present conditions, present methods, present sources of materials, present prices; these shall govern. There need be no preliminary surveys, there are no uncertainties. All other lines of railroad are continued in existence. This railroad once obliterated is in existence for the purpose of reproducing its competitor. And, to secure uniformity, prices as of June 30, 1914 are

¹ "When the Northern Pacific was constructed no other line of railroad operated in its vicinity over most of the distance; today for a considerable part of the way that line is paralleled by the Chicago, Milwaukee & St. Paul. It will be recognized that freight for the construction of the Northern Pacific can be handled over this line.

It was necessary in the building of the Central Pacific to construct expensive wagon roads for the purpose of hauling the necessary materials. Today those are highways maintained at the public expense and are available. Whenever it would be necessary to build a road not in existence, that expense is included in the price." Texas Midland, 1 Val. Rep. 1, 139.

² For illustration of extra costs because of change in plans, see Winston-Salem Southbound, 1 Val. Rep. 187, 194. Here it was said, p. 185:

"Obviously it cannot be assumed that in theoretical reproduction of the property these contingencies would occur, and no sum should be included in the estimate of cost of reproduction new in the valuation, because of such past occurrences."

³ See Railroad Valuation, p. 107.

⁴ Brief of Messrs. Farrell and Benton, Kansas City Southern case, p. 36. See Hearings, May, 1915, p. 31, for the original discussion of the problem, also Carrier Valuation Brief of 1915, pp. 33-39.

⁵ Texas Midland, 1 Val. Rep. 1, 115.

⁶ Ibid. Similarly wooden cars which had been rebuilt with steel underframes were inventoried as tho originally so built. See discussion by Mr. Wells of the Texas Midland, Hearings, March, 1917, p. 801.

applied to inventories made as of June 30 of subsequent years. For the Winston-Salem Southbound, for example, unit prices determined as of June 30, 1914 are used with an inventory of June 30, 1915, together with a present value of lands dated June 30, 1915.¹ For later appraisals the difference in dates is even greater. Finally the Commission, to secure that uniformity which it takes to guarantee comparability, even assumes that the credit of all "reproduced" roads will be the same.² Surely the indictment of cost of reproduction need not be carried farther. It is purely an artificial and hypothetical figure, bearing no real relationship to past sacrifices, or present investment.³ And more than this.

¹ 1 Val. Rep. 187, 192. See Winston-Salem Brief, p. 12.

"Our inventories are taken as of different dates, but all prices are applied as of June 30, 1914. The first thought was to apply prices as of the date of the inventory in each case, but subsequent reflection led to the conclusion that this course could not properly be pursued.

"The railroads of this country are competitive. If the costs which are being produced by the application of these prices are to be influential in fixing of rates, they ought to be upon some common basis. Without attempting to indicate how far changes in prices should affect changes in value, it is manifest that all carriers ought to be, if possible, measured by the same standard.

"The fluctuations in price which have occurred since June 30, 1914, illustrate and confirm this view. Many prices, especially of equipment, are today double those of 1914. It would, in our view, be manifestly absurd to apply to the Pennsylvania lines between Washington and Philadelphia, of which the date of valuation is 1914, prices as of that date, while applying to the Baltimore and Ohio, a parallel line constructed at substantially the same time and developed under the same conditions, the prices of June 30, 1918, which happens to be the date of its valuation. If a uniform price be applied that price can be varied by appropriate factors or otherwise as justice may require." Texas Midland, 1 Val. Rep. 1, 139, 140. This answers the objection contained in Kansas City Southern Protest, p. 7.

² The carriers, in answer to the original query by Director Prouty, had proposed that the price basis should be the same for all carriers. Hearings, May, 1915, p. 94; see also, Carrier Valuation Brief of 1915, p. 123 and following.

In the Texas Midland Reply Brief it is insisted also that land values of 1916 were higher than of 1914. These "change of value" were alleged to "render impossible the determination of any accurate values" (p. 113). At p. 108, it is said: "The Land Brief attempts . . . to justify its low values by the claim that, because the carrier made its valuation in 1916, the figures then determined reflected certain increases in value." See Mr. Newman's Land Brief, pp. 29-37. ³ Texas Midland, 1 Val. Rep. 1, 115.

³ This is clearly recognized in the Texas Midland opinion, pp. 31, 139. Compare Mr. Farrell, in his Texas Midland Brief:

"If prices of materials now in use have increased, such increase will of course be reflected in the Commission's estimate of cost of reproduction new." P. 35.

Instances of unit prices alleged to be below actual cost are cited by Durham, "Comments . . . A., B. & A.," p. 33 (equipment); by Samuel Untermeyer, Hearings, October, 1918, p. 28

When so much is dependent upon "progress of the arts," both past and future, upon the accuracy, adequacy, and comparability of data, upon conditions of service and maintenance, and finally upon the judgment of the subordinate engineer who makes the observation on which the figures ultimately depend, it can hardly be claimed that the Commission's figures in any sense of the word represent approximate accuracy — even upon the hypothesis assumed.¹

But the Commission has promised to fix upon a single figure of "final value," and the "basic facts," cost of reproduction new, and less depreciation, of plant and equipment, the "present value" of land, original cost to date (where found as a "fact"), together with financial, traffic and operating data, have been made "final" upon the theory that there remains "but the one step of deducing from the facts stated the sum to be found."² The entire lack of comparability of these data must be readily apparent: gathered upon different hypotheses, as of different dates, there is no single coördinating factor. The cost of the existing units, less depreciation, what has been here called "unimpaired investment," has been rejected as speculative by the same men who report cost of reproduction as a "fact." Any value, based upon the set of "underlying facts" made final

¹ The hypothesis is summarised in the syllabus of the Texas Midland opinion, p. 2, as follows:

"Cost of reproduction new of the common-carrier property ascertained and stated, upon the assumed basis of the non-existence of the railroad while all other conditions in the same territory were taken as existent on valuation date, that the most practicable and economical construction program is employed, and that to an inventory of items making up the physical property, shall be applied cost prices fairly representative of conditions on valuation date, with the addition of the estimated cost of placing the items in position as of valuation date, and including certain overhead charges."

It would seem that the handling of the second hand units was inconsistent with this definition, and especially the cost and freight on the Texas Midland crane. 1 Val. Rep. 1, 46.

² Texas Midland, 1 Val. Rep. 1, 6. See discussion, above, pp. 7-10.

in the preliminary opinions, must be an arbitrary figure, however stated in the opinion of the Commission. The very requirements of the Act make this inevitable.

The Valuation Act is, after all, only an attempt to provide the Commission with information concerning the elements of "fair value" listed in the "classic" statement of *Smyth v. Ames*:¹

In order to ascertain that value the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the present as compared with the original cost of construction, the probable earning capacity under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.²

That this "rule" — which is, in fact, no rule at all — should have been invoked by all parties indicates the extent to which the problem of railroad valuation has been dominated by that appeal to authority fundamental in legal documents and legal procedure.³

The function of the carrier brief in the Texas Midland case was frankly stated as a consideration of "the principles . . . laid down in decided cases for the guidance of tribunals charged with the duty of determining value."⁴ Is not value determination, "a judicial question . . . determined as other judicial questions are, by the application of the settled rules and established

¹ *Texas Midland Brief*, p. 75.

² 169 U. S. 466, 546; quoted *Minnesota Rate Cases*, 230 U. S. 352, 434; analyzed and critically discussed in detail, *Railroad Valuation*, pp. 16-27.

³ See *Texas Midland Brief*, pp. 27, 75; *Aitchison, Brief for the Nat'l Ass'n Ry. Com'n*, p. 50; *A., B. & A. Brief*, pp. 22, 23, 388, 484 and following, a detailed analysis.

⁴ P. 75.

principles of jurisprudence?"¹ And so with the definition of value: "The mere language of commissioners, text-writers, economists, valuation engineers and the like, especially when not employed with reference to the meaning of this Act, is of no consequence, and does not require discussion."² Only "the decisions of the Supreme Court of the United States, and those of the lower courts . . . in harmony therewith are binding upon the Commission."³ And yet these final authorities are themselves vague and uncertain. Surely when one finds a "general rule" supported by a jumble of cases on taxation, condemnation, capitalization, and regulation, he may fairly protest.⁴

It is too early to say that the Commission will not fulfil the promise to state single figures of value. It is even conceivable that the sum of cost of reproduction and the "present value" of land may in some cases be so reported.⁵ But it is not too early to raise the question of the real scientific validity of such figures (or any other figures reported) when based upon a "judgment" purporting to consider the irreconcilable totals and elements made final in the preliminary opinions. Certainly the totals now being published as tentative valuations offer

¹ Kansas City Southern Brief, p. 110.

² Texas Midland Reply Brief, p. 50; at p. 109, Kansas City Southern Brief, it was said:

"It is to be remembered at all times that the valuation of railway property is a judicial question, and not a legislative one. The rules, principles, and methods pointed out by the courts must be followed in preference to economic theories or acts of legislative bodies."

³ Texas Midland Brief, p. 50.

⁴ Ibid., pp. 353-467; see also Carrier Valuation Brief of 1915, pp. 479-532. After all, what the Railroad Commission of Idaho, or a United States District Judge in Arkansas, or the Supreme Court of Wisconsin (or even the United States Supreme Court) did or said, under the peculiar facts of a given case, is conclusive of the validity of no general principle. An argument in terms of "it has always been recognised," or of "this has been so often affirmed, not only by the Courts, but by the Commission itself, that the principle can be asserted without contradiction," or of "the foregoing cases refute the contention" hardly constitutes analysis of a problem. Texas Midland Brief, pp. 354, 379.

⁵ See Mr. Prouty's argument, Hearings, January, 1920; and especially his Memorandum on Final Value, p. 4.

no basis for a figure of "final value." They represent a compliance with a statute, as that statute has been interpreted, but they represent nothing more. The first use of the "rule" in *Smyth v. Ames* was a frank "guess."¹ Will the Commission in making its final reports speak with equal courage? Or will the Commission take refuge behind generality? It suffices for the present to recognize that the progress thus far made is not of a character to silence the skeptic who has small confidence in the conclusiveness or ultimate usefulness of the figures so expensively secured and so elaborately presented.

¹ C., M. & St. P. v. Tompkins, 90 Fed. 363, 369; *Railroad Valuation*, p. 17.

APPENDIX

TEXT OF THE VALUATION SECTION (19a) OF THE INTERSTATE COMMERCE ACT OF 1913

That the Commission shall, as hereinafter provided, investigate, ascertain, and report the value of all the property owned or used by every common carrier subject to the provisions of this Act. To enable the Commission to make such investigation and report, it is authorized to employ such experts and other assistants as may be necessary. The Commission may appoint examiners who shall have power to administer oaths, examine witnesses, and take testimony. The Commission shall make an inventory which shall list the property of every common carrier subject to the provisions of this Act in detail, and show the value thereof as hereinafter provided, and shall classify the physical property, as nearly as practicable, in conformity with the classification of expenditures for road and equipment, as prescribed by the Interstate Commerce Commission.

First. In such investigation said Commission shall ascertain and report in detail as to each piece of property owned or used by said common carrier for its purposes as a common carrier, the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation, and an analysis of the methods by which these several costs are obtained, and the reason for their differences, if any. The Commission shall in like manner ascertain and report separately other values, and elements of value, if any, of the property of such common carrier, and an analysis of the methods of valuation employed, and of the reasons for any differences between any such value, and each of the foregoing cost values.

Second. Such investigation and report shall state in detail and separately from improvements the original cost of all

lands, rights of way, and terminals owned or used for the purposes of a common carrier, and ascertained as of the time of dedication to public use, and the present value of the same, and separately the original and present cost of condemnation and damages or of purchase in excess of such original cost or present value.

Third. Such investigation and report shall show separately the property held for purposes other than those of a common carrier, and the original cost and present value of the same, together with an analysis of the methods of valuation employed.

Fourth. In ascertaining the original cost to date of the property of such common carrier the Commission, in addition to such other elements as it may deem necessary, shall investigate and report upon the history and organization of the present and of any previous corporation operating such property; upon any increases or decreases of stocks, bonds, or other securities, in any reorganization; upon moneys received by any such corporation by reason of any issues of stocks, bonds, or other securities; upon the syndicating, banking, and other financial arrangements under which such issues were made and the expense thereof; and upon the net and gross earnings of such corporations; and shall also ascertain and report in such detail as may be determined by the Commission upon the expenditure of all moneys and the purposes for which the same were expended.

Fifth. The Commission shall ascertain and report the amount and value of any aid, gift, grant of right of way, or donation, made to any such common carrier, or to any previous corporation operating such property, by the Government of the United States or by any State, county or municipal government, or by individuals, associations, or corporations; and it shall also ascertain and report the grants of land to any such common carrier, or any previous corporation operating such property, by the Government of the United States, or by any State, county, or municipal government, and the amount of money derived from the sale of any portion of such grants and the value of the unsold portion

thereof at the time acquired and at the present time, also, the amount and value of any concession and allowance made by such common carrier to the Government of the United States, or to any State, county, or municipal government in consideration of such aid, gift, grant, or donation.

Except as herein otherwise provided, the Commission shall have power to prescribe the method of procedure to be followed in the conduct of the investigation, the form in which the results of the valuation shall be submitted, and the classification of the elements that constitute the ascertained value, and such investigation shall show the value of the property of every common carrier as a whole and separately the value of its property in each of the several States and Territories and the District of Columbia, classified and in detail as herein required.

Such investigation shall be commenced within sixty days after approval of this Act and shall be prosecuted with diligence and thoroughness, and the result thereof reported to Congress at the beginning of each regular session thereafter until completed.

Every common carrier subject to the provisions of this Act shall furnish to the Commission or its agents from time to time and as the Commission may require maps, profiles, contracts, reports of engineers, and any other documents, records, and papers, or copies of any or all of the same, in aid of such investigation and determination of the value of the property of said common carrier, and shall grant to all agents of the Commission free access to its right of way, its property, and its accounts, records, and memoranda whenever and wherever requested by any such duly authorized agent, and every common carrier is hereby directed and required to coöperate with and aid the Commission in the work of the valuation of its property in such further particulars and to such extent as the Commission may require and direct, and all rules and regulations made by the Commission for the purpose of administering the provisions of this section and section twenty of this Act shall have the full force and effect of law. Unless otherwise ordered by the Commission, with the reasons there-

for, the records and data of the Commission shall be open to the inspection and examination of the public.

Upon the completion of the valuation herein provided for the Commission shall thereafter in like manner keep itself informed of all extensions and improvements or other changes in the condition and value of the property of all common carriers, and shall ascertain the value thereof, and shall from time to time, revise and correct its valuations, showing such revision and correction classified and as a whole and separately in each of the several States and Territories and the District of Columbia, which valuation, both original and corrected, shall be tentative valuations and shall be reported to Congress at the beginning of each regular session.

To enable the Commission to make such changes and corrections in its valuations of each class of property, every common carrier subject to the provisions of this Act shall make such reports and furnish such information as the Commission may require.

Whenever the Commission shall have completed the tentative valuation of the property of any common carrier, as herein directed, and before such valuation shall become final, the Commission shall give notice by registered letter to the said carrier, the Attorney General of the United States, the governor of any State in which the property so valued is located, and to such additional parties as the Commission may prescribe, stating the valuation placed upon the several classes of property of said carrier, and shall allow thirty days in which to file a protest of the same with the Commission. If no protest is filed within thirty days, said valuation shall become final as of the date thereof.

If notice of protest is filed the Commission shall fix a time for hearing the same, and shall proceed as promptly as may be to hear and consider any matter relative and material thereto which may be presented in support of any such protest so filed as aforesaid. If after hearing any protest of such tentative valuation under the provisions of this Act the Commission shall be of the opinion that its valuation should not become final, it shall make such changes as may be necessary,

and shall issue an order making such corrected tentative valuation final as of the date thereof. All final valuations by the Commission and the classification thereof shall be published and shall be prima facie evidence of the value of the property in all proceedings under the Act to regulate commerce as of the date of the fixing thereof, and in all judicial proceedings for the enforcement of the Act approved February fourth, eighteen hundred and eighty-seven, commonly known as "the Act to regulate commerce," and the various Acts amendatory thereof, and in all judicial proceedings brought to enjoin, set aside, annul, or suspend, in whole or in part, any order of the Interstate Commerce Commission.

If upon the trial of any action involving a final value fixed by the Commission, evidence shall be introduced regarding such value which is found by the court to be different from that offered upon the hearing before the Commission, or additional thereto and substantially affecting said value, the court, before proceeding to render judgment shall transmit a copy of such evidence to the Commission, and shall stay further proceedings in said action for such time as the court shall determine from the date of such transmission. Upon the receipt of such evidence the Commission shall consider the same and may fix a final value different from the one fixed in the first instance, and may alter, modify, amend or rescind any order which it has made involving said final value, and shall report its action thereon to said court within the time fixed by the court. If the Commission shall alter, modify, or amend its order, such altered, modified, or amended order shall take the place of the original order complained of and judgment shall be rendered thereon as though made by the Commission in the first instance. If the original order shall not be rescinded or changed by the Commission, judgment shall be rendered upon such original order.

The provisions of this section shall apply to receivers of carriers and operating trustees. In case of failure or refusal on the part of any carrier, receiver, or trustee to comply with all the requirements of this section and in the manner prescribed by the Commission such carrier, receiver, or trustee shall for-

feit to the United States the sum of five hundred dollars for each such offense and for each and every day of the continuance of such offense, such forfeitures to be recoverable in the same manner as other forfeitures provided for in section sixteen of the Act to regulate commerce.

That the district courts of the United States shall have jurisdiction, upon the application of the Attorney General of the United States at the request of the Commission, alleging a failure to comply with or a violation of any of the provisions of this section by any common carrier, to issue a writ or writs of mandamus commanding such common carrier to comply with the provisions of this section.

It shall be the duty of every common carrier by railroad whose property is being valued under the Act of March first, nineteen hundred and thirteen, to transport the engineers, field parties, and other employees of the United States who are actually engaged in making surveys and other examination of the physical property of said carrier necessary to execute said Act from point to point on said railroad as may be reasonably required by them in the actual discharge of their duties; and, also, to move from point to point and store at such points as may be reasonably required the cars of the United States which are being used to house and maintain said employees; and, also, to carry the supplies necessary to maintain said employees and the other property of the United States actually used on said railroad in said work of valuation. The service above required shall be regarded as a special service and shall be rendered under such forms and regulations and for such reasonable compensation as may be prescribed by the Interstate Commerce Commission and as will insure an accurate record and account of the service rendered by the railroad, and such evidence of transportation, bills of lading, and so forth, shall be furnished to the Commission as may from time to time be required by the Commission.

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